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Cancer of the Body of the Uterus.*

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Frequency of Malignant Disease of the Uterus.

The female sex is much more often affected by malignant disease than the male, and of all the organs of the body the uterus is most frequently attacked. In March, 1898, the Birmingham Branch of the British Medical Association appointed a Committee of which I was a member, to enquire into the influence of locality on the prevalence of malignant disease. The report of the Committee is published in the *Birmingham Medical Review* for May to July, 1900, and included in it is a table showing the sex and the organs affected in 4,972 persons who died of cancer in the course of ten years in a population of about 750,000. In 4,827 cases in which the sex was noted, 2,936, equal to 60·8 per cent. occurred in females. The excessive incidence in women is more than explained by the number of cancers affecting the generative organs, especially the uterus and breast. The stomach, including the pylorus, shares with the uterus the bad pre-eminence of being the organ most affected by malignant disease. The two furnish almost the same number of deaths, the uterus affording 724, all of which affect of course only one sex, whereas the stomach cases are spread over the two sexes. From the figures here given it is seen that in one out of every four women who die of malignant disease the uterus is the organ primarily affected. From the Registrar-General's report for 1901 it appears

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that there were 27,487 deaths from cancer, of which 16,596 were in females. If the rate just mentioned for the Midland Counties holds good generally there are each year in England and Wales about 4,000 deaths from uterine cancer; and as the duration of the disease probably averages two to three years there are at the present time approximately 10,000 women affected by uterine cancer in these countries alone.

Frequency of Malignant Disease of the Body of the Uterus.

The proportion of cases beginning in the body of the organ to the total number of uterine cancers has shown a tendency to rise in proportion to the increase in the number of exact observations. Thus Arnott, writing in 1870 on the results of 57 *post-mortem* examinations of patients dying from uterine cancer, mentions only one "remarkable case" in which the cervix was free. In 1876 Schatz had observed two affecting the body in a total of eight uterine cancers. In 1899 Gebhard states that about six per cent. of all uterine cancers are body cancers, a ratio which agrees with my own experience. In 1886 Gusserow had collected from literature 122 cases (including three unpublished cases of his own). Among these were some cases of sarcoma, while in the older literature, not rarely cases of sloughing fibroma were mistaken for cancer of the fundus. These latter cases are now, of course, easily and generally recognised, and do not lead to confusion, but it is still too much the rule to include cases of sarcoma when dealing with the question of cancer of the body. The two affections present so many differences and pecularities that for the future separate consideration is to be desired for them.

Incidence of Cancer of the Body of the Uterus.

Cancer of the body of the uterus is not a disease of misery or destitution; none of my fifteen patients was very poor and the majority were in comfortable circumstances. The youngest patient was aged 47 and the oldest 76 years. Six of the women had attained the age of 60 years and upwards, and the average age of the 15 was 57 at the time the diagnosis was made. Three of the patients were widowed, apparently a large proportion, but in this connection the age must be taken into consideration. Four others were married; the remaining eight, more than half the total, were single women of whom at least five were undoubted virgins. The disease is the cancer par-excellence of adult virgins. Of the seven women who had been married and had thus been exposed to the chances of conception, the total was seven; of these one had had eight children and one miscarriage, and

three others had each borne one child 40, 50, and 14 years ago respectively; the other three were nulliparous. The seven married and widowed patients had had altogether eleven children and one miscarriage, an average of 1·57 children and 0·14 miscarriage to each patient. It therefore appears that the women who are affected by cancer of the body of the uterus are old women of whom a large proportion are single, and of whom the married ones have passed through considerably less than the average number of pregnancies.

Most of the patients had already passed the menopause; in one the history in reference to this point was not reliable; four patients were at or near the climacteric, and in the other ten menstruation had ceased, in three for more than twenty years, and in two others for more than ten years; thus in one-third of the cases the affection began more than ten years after the menopause. With regard to the climacteric age one patient ceased menstruation at 30, one at 40, and the others at various ages over 44. In four of the patients, a large proportion, the menopause did not come on till 50 or upwards. It therefore appears that carcinoma affects chiefly women who have passed the menopause, and that the age at which the menses cease often departs from the normal but not in any definite direction; occasionally menstruation ceases very early, but more frequently it is prolonged to a later age than usual.

The Origin and Development of Cancer of the Body of the Uterus.

Every organ appears to have its own particular form of cancer, and the body of the uterus is no exception to the rule. Here the typical form is a structure made up essentially of alveoli which in their simpler forms recall the glands normally found in the mucous membrane lining the cavity. It appears as if some of the glands have enormously increased in number and size, and have at the same time undergone a bizarre form of evolution which has carried them a greater or less distance towards a final stage of development into ordinary spheroidal celled carcinoma. Examination of my specimens appears to prove that at least in the great majority of cases cancer of the uterine body develops progressively through stages which begin with malignant adenoma at the one end and pass through adeno-carcinoma, to form at the other end spheroidal celled carcinoma in which the evidence of glandular origin may have entirely disappeared. Any of these stages may be missed, or may persist for a considerable time; thus, for instance, a tumour of some standing may, as rarely happens, show the structure of a pure malignant adenoma; or more commonly the earliest stage observed is that of adeno-

carcinoma, which may persist for an indefinite time; but as a rule evidence of the evolution just mentioned may be discerned at different parts of the same tumour, and generally the most advanced stages appear to have been reached in the oldest and deepest parts of the growth, while at the growing portions the earlier stages are seen.

Squamous epithelioma. Cancer of the body of the uterus is usually described as beginning in two ways, either from the glands as just indicated, or from the surface epithelium. In the latter case it is stated that there is in the first instance an increase in the number of layers of surface epithelium, the upper layers undergoing a horny transformation. Then as in squamous epithelioma, processes starting from the deeper layers of the epithelium penetrate into the muscular wall of the organ and give rise to an ordinary squamous epithelioma such as is met with typically arising on the outer surface of the cervix or on the vulva. Occasionally only the first stage of this development occurs, the epithelium becoming stratified, squamous, and keratoid, and the surface appearing covered with a peculiar opaque whitish layer like the sugar icing on a cake. This is the condition known as uterine ichthyosis, and is analogous to the change which is frequently seen in patches on the tongue and on the innermost surfaces of the vulva. From a surface epithelium altered in this way the origin of a true squamous epithelium is easily intelligible, and at least nine cases in which the occurrence of this form of tumour has been described in the uterine body are referred to by Gebhard.

There is, however, another and a much more common way in which a tumour having some of the appearances of a squamous epithelioma may develop in the uterus. In the older portions of a carcinoma developing in the ordinary way from an adeno-carcinoma, groups of epithelial cells, especially in the central portions of the alveoli, undergo a hyaline change, the cell bodies becoming swollen and homogeneous, taking on a diffuse stain, and finally becoming fused together so that the distinction between the separate cells is lost. The nuclei at the same time undergo remarkable changes; they become swollen, stain less deeply and more diffusely than usual, and finally break up into irregular fragments and granules. In the cell bodies also, concentric lamellæ are often developed, and a group of cells which has undergone this degeneration frequently presents the appearances of a "cell nest" or "epithelial pearl," such as is typically found in squamous epithelioma. Typical changes of this kind were seen in three of my cases and all the intermediate stages could be followed from adeno-carcinoma through ordinary spheroidal-celled carcinoma to this imitation of squamous epithelioma.

In the *London Obstetric Transactions* there are several cases recorded in which a similar process appears to have occurred. Thus Targett (*Obst. Trans.*, 1900, p. 281) showed a specimen of carcinoma of the body of the uterus which was supposed to be squamous epithelioma, but on further investigation proved not to be so. Lewers (*Obst. Trans.*, March, 1903), showed a specimen of keratinising cancer of the body of the uterus, and Mrs. Boyd referred to a similar case. Doran (*Obst. Trans.*, 1903, p. 376) showed for Batchelor an important case of squamous epithelioma which was carefully examined by Lockyer, who found it to be typical; further examination showed, however, that the growth started in the columnar epithelium of the glands of the mucous membrane; in spite of this fact the last observer thinks it better to speak of the tumour as squamous epithelioma of the body of the uterus, a view with which I most emphatically disagree, since it can only lead to confusion of thought and expression. The term squamous epithelioma ought to be reserved for the form of growth that begins in a squamous epithelium and that is fully developed from the start. Where, on the other hand, the appearances described are due to a degeneration occurring in the later stages of a tumour which passes through a well-defined course of development, such as does the glandular cancer of the body of the uterus, it is better to speak of a tumour showing these changes as a keratoid or keratinising adeno-carcinoma (*vide* Fig. 4). Gebhard allows that this form of metaplasia of cells may occur in an adeno-carcinoma, and thinks such a change had taken place in at least four of the nine cases mentioned by him.

In the fifteen cases operated upon and investigated by me, in all but one the glandular nature of the swelling was apparent, and in the fifteenth the examination, which was not full enough to be conclusive, still afforded some indications that the cancer in this case also had a similar origin. In three of the cases there was marked keratoid degeneration, and in two of these, fairly typical cell nests were present in the older portions of the tumours. Before accepting the microscopic diagnosis of squamous epithelioma of the body of the uterus it is therefore necessary that the most careful and complete investigation of the specimen shall be made, including the examination of sections from different portions of the growth, and more especially from the growing edge.

In addition to my own fifteen cases I have been able to examine five other specimens in the museum of the university. Two of these appear microscopically to be alveolar carcinoma, but the specimens are too much macerated for detailed examination. A

third is a localised malignant adenoma of the everting type. The other two are examples of adeno-carcinoma of the body supervening on large submucous fibromyomata.

Glandular Cancer of the Body of the Uterus.

Cancer of the body of the uterus is often divided into diffuse and localised varieties. In thirteen cases of the present series which were treated by radical operations, the affection was diffuse in seven and localised in six. In the diffuse cases cancer symptoms had been present for a longer period than in the localised; in the former case the shortest duration of symptoms was nine months in one patient, in two others the evidence of cancer had been present for one year, and in the others for $1\frac{1}{2}$ to 2 years; the average duration of symptoms in six cases was $1\frac{1}{4}$ years. Of the patients with localised cancer, in one symptoms had been present for one year and in the other five for six months or less, the average for the whole six patients being six months. The symptoms in the diffuse cases were more severe at the time of operation, several of the patients showing marked cachexia, while in the localised cases as a rule the general health of the patient had suffered comparatively little. It is further to be noted that in the diffuse cases the growth was not only of greater superficial extension but had invaded the deeper layers of the uterine wall, so that in one case the whole organ including the cervix was involved, and in two peritoneal adhesions had formed to intestine and mesentery; in two other diffuse cases collections of pus had formed in the uterine cavity. There are therefore ample clinical and pathological reasons for considering that the localised and diffuse cases represent merely stages of the disease and not true varieties, a conclusion that is further strongly supported by the histological examination of the specimens.

Cancer of the body has also been classified according to the characters of the surface of the tumour which may be smooth and nodular, coarsely papular, or closely set with fine filiform or villous projections. The cases are accordingly divided into nodular, papillary, and villous, and of these the last variety is by far the most common. None of these classes corresponds to a distinct histological variety of tumour. To whichever variety a cancer belongs it forms in its early stages a localised tumour whose acquaintance has hitherto been made only after it has attained a certain definite size easily seen by the naked eye. The exact origin and especially the nature of the tumour germ or matrix which presumably gives rise to the disease is therefore entirely a matter of inference.

In the earlier stages of a malignant adenoma or adeno-carcinoma of the uterus the size, shape, and arrangement of the alveoli vary very greatly, but can for the most part be arranged in two varieties. In one of these the alveoli are large and the epithelial lining gives off buds or finger-like projections into the lumen; in the other the alveoli remain small and are arranged as if a tube more or less resembling a uterine gland had elongated and become tortuous, and at the same time had given off lateral processes which in their turn branch and branch again. In the latter kind of tumour the alveoli are often found in definite families or rounded collections, and according as they are cut transversely, obliquely, or longitudinally, appear as round, oval, or narrow elongated spaces lined with epithelium and separated from each other by a small quantity of connective tissue which is continuous with the rest of the stroma. This latter glandular type of cancer has been called *everting*, extra-glandular, or axifugal, while the first or papillary variety is described as *inverting*, intra-glandular, or axipetal (*vide* Figs. 1 and 2). As a rule both these varieties of structure are found co-existing in varying proportions in the same tumour, and portions showing a mixture of the peculiarities of both are frequent. It is therefore important to remember that they represent merely different arrangements and not distinct varieties of tumours; they are in fact chiefly important for purposes of description.

In the more advanced stages of development the alveoli become completely packed or filled with epithelial cells and the obvious glandular origin of the tumour may become lost (*vide* Fig. 3). Speaking generally the inverting type of tumour gives rise to large alveoli, while in the everting type the spaces tend to remain smaller.

Modes of Extension of Glandular Cancer of the Body of the Uterus.

At its very beginning cancer of the body of the uterus appears to be represented by a minute, possibly microscopic collection of cells, representing the tumour germ or matrix. Occasionally, as in two of my cases, two foci with a clear interval may be present, two matrices having begun to grow simultaneously. We are ignorant of the exact nature and relations of the matrix, which may have its seat among the surface epithelial cells or more probably in the subjacent mucous membrane. Whether it consists of one cell or a group of cells, and if the latter, whether it is made up merely of a collection of cells without definite arrangement, or of a group definitely arranged into a gland-like structure, we cannot tell. At the time when we first make its acquaintance a definite nodule visible

to the naked eye is already present and has a structure characteristic of one of the forms of cancer above described. This nodule grows in all directions, over the surface, outwards into the muscular wall of the organ, and inwards into the cavity. The growth takes place more easily in the direction of least resistance, and so we find in the early stage a nodule making a considerable prominence into the cavity. Superficial growth also appears to be easy in the cavity of the uterus and so the cancer tends to spread over the entire surface of the endometrium, its extension being bounded for a time, however, at the internal os. The growing margins of the tumour and its free surface, appear often to have a less dense structure and to represent an earlier stage in the development of the cancer, than the deeper parts invading the muscular coat, suggesting that pressure has something to do also with the development of adenocarcinoma into the spheroidal-celled variety in which the alveoli are filled with cells.

The statement is commonly made or implied that the local extension of the growth takes place at least in part by the conversion of the adjacent endometrium, the epithelium and glands becoming transformed into cancerous epithelium and alveoli owing to some sort of spermatic influence exerted by the tumour. If this were so the local extension of the growth would depend upon a process fundamentally different from the formation of glandular and remote metastases, the secondary tumours in the latter case being formed by the continued growth of groups of cells broken off and transplanted from the primary tumour. A careful examination of the growing edge, in those of my cases suitable for the purpose, affords no evidence of the conversion into cancer of the original glands and epithelium of the part. At or near the growing edge of the tumour the endometrium ceases abruptly. The new growth and the endometrium are sometimes closely contiguous, in which case the tumour may slightly overlap the margin of the endometrium. Sometimes at the margin of the growing tumour hæmorrhages are seen in the surface layers of the endometrium; at others there is an intervening band of connective tissue which may be of considerable breadth, or shows more or less marked infiltration with round cells, and is sometimes broken by hæmorrhage. The mucous membrane may be continued over the surface or upwards round the side of the cancerous tumour for some distance, as was well seen in one of my cases where the mucous membrane covering the tumour showed more marked signs of atrophy than the adjacent mucous membrane covering the unaffected portion of the uterine surface.

Growth at the periphery of the cancer thus appears to take place

at least in the great majority of instances by the continuous increase of its own constituent elements. Occasionally, however, it seems possible that the extension may take place by conversion of the epithelial cells of the endometrium in the neighbourhood, and there are appearances suggesting this process in sections taken from one of my cases.

For a considerable time the cancer forms a localised affection which invades the neighbouring portions of the uterine wall by growing into the tissue spaces of the fibro-muscular coat. After a time, however, it invades the larger lymphatic vessels as well as blood vessels of considerable size, and then rapidly spreads beyond the limits of the uterus. The last two avenues of extension are of the utmost practical importance in discussing the question of the time for operating, the method of operation, and the ways in which recurrence may be expected. By both lymphatics and blood vessels the spreading takes place by embolism, or less commonly by the direct invasion of the vessel wall.

Lymphatic Invasion.

The lymphatics of the uterus are arranged in three close networks situated in the mucous membrane, the muscular coat, and in the peritoneum with the subperitoneal layer of connective tissue. The lymphatic systems of the body and cervix of the uterus are continuous so that the cancer is able to spread in either direction from one to the other. The uterine lymphatics vary enormously at different ages; until puberty they are relatively few and small; during adult sexual life they are abundant and large, more especially during pregnancy; after the menopause the lymphatic supply becomes diminished progressively with advancing age. In this last change is found one of the chief reasons which explain the fact of cancer of the body of the uterus being, as a rule, slower in its growth and more favourable as regards treatment than cancer of the neck of the uterus.

In the muscular coat there are numerous large lymph vessels lying, along with large blood vessels, in the middle and outer muscular layers. These are the vessels through which the connection takes place between the lymphatics of the cervix and those of the body. The lymphatics of the uterine body are finally collected into three groups of collecting trunks:

(*a*) The principal or transverse group comprises 4 or 5 trunks which appear beneath the cornu of the uterus. These at first follow

the terminal segment of the uterine artery and then pass below the ovary where they are joined by the vessels from this gland. They then run with the ovarian vessels in the ovario-pelvic ligament and ascend towards the lumbar region, crossing with the vessels in front of the ureter. A little below the level of the hilum of the kidney the lymphatics curve sharply inwards and "descend in showers" upon the juxta-aortic glands of the same side, a few of them reaching the pre-aortic glands.

(*b*) One or two lymphatic vessels begin a little below the cornu of the uterus and run directly outwards to end in the middle chain of the external iliac glands, which also receives lymphatics from the cervix.

(*c*) A single lymphatic vessel runs along the round ligament to end in one of the upper and internal inguinal glands.

As in the case of the veins the uterine lymphatics communicate with those of the neighbouring organs, the vagina, rectum, broad ligament, tubes, ovaries and round ligaments.

The regional glands belonging to the body of the uterus are principally juxta-aortic glands, and secondarily certain of the external iliac and inguinal glands. The left juxta-aortic group forms an almost continuous vertical chain along the left side of the abdominal aorta; they lie on the vertical attachments of the psoas muscle and on the left pillar of the diaphragm, and are crossed in front by the left renal artery and vein. The right juxta-aortic glands lie some in front and some behind the vena cava. Three to six of the glands are pre-venous and are usually found below the junction of the renal vein with the inferior cava; the rest are retrovenous and lie like the left juxta-aortic glands on the origins of the psoas and on the external surface of the corresponding pillar of the diaphragm. Both sets of glands receive the efferent trunks of the common iliac glands, the parietal lymphatics, and the lymphatics of the kidneys and genital glands, including the adnexa and the corresponding half of the body of the uterus. From the juxta-aortic glands four groups of efferent vessels are given off and pass into the pre-aortic and retro-aortic glands, into the receptaculum chyli, and into the thoracic duct a little above its origin.

From the above description of the uterine lymphatics it appears that the first glands to be affected are those intimately connected with the large abdominal vessels, which have such relations as preclude their removal by operation. Fortunately it appears that

invasion of the lymphatics takes place relatively late in the course of the disease. The efforts of the practitioner must therefore be directed to diagnosing cases of uterine cancer at a stage before invasion of the lymphatics has taken place. By the lymphatics there is a kind of intermittent invasion of the body, a spread by stages or steps with definite halting places at which the invasion is temporarily arrested. For a time the cancerous emboli which are the carriers of infection from the uterine body are arrested in glands of the juxta-aortic group. After a time emboli are in turn given off from these glands and invade some of the mediastinal group, or they may be conveyed, by means of the efferents which join the thoracic duct, into the blood stream and thus to any of the remote places of the body. Lymphatic invasion differs in this way, and also in being more gradual, from the mode of spread that is due to invasion of the blood vessels, especially the veins, by emboli derived from the primary growth.

Invasion by the Blood-vessels.

The veins of the uterus are very thin walled so that on section they may appear as mere clefts or slits in the muscular wall of the body of the uterus, where there is a close plexus of large veins, the largest being found under the peritoneum on the posterior surface. From this plexus large vessels run outwards to the side of the uterus to enter into an extensive plexus placed along the lateral wall of the uterus and vagina on either side, the utero-vaginal plexus. At the level of the internal os arise from this latter plexus on either side, two uterine veins which accompany the uterine artery, one passing with the artery in front of the ureter and the other behind. The uterine veins join with the collecting trunks of the vesico-vaginal plexus to form a common stem, which also takes up the obturator vein and then joins the internal iliac. The uterine veins receive branches from between the layers of the broad ligaments and communicate with veins of the round ligaments and through these with veins of the abdominal walls and external genital organs; and further they communicate with the veins of the tube and ovary and also with the ovarian veins, and finally with the veins of the pelvic floor, rectum, and external genitals.

From the ovary, tube, and upper part of the broad ligament the blood is collected by a number of veins which form the large pampiniform plexus between the layers of the mesosalpinx. The vessels from this plexus terminate in the ovarian vein which runs upwards along with the ovarian artery into the lumbar region, where

the right ovarian empties itself into the vena cava, and the left into the left renal vein.

The invasion of the blood vessels by cancer appears to be more frequent than has been generally recognised. Where the veins are invaded the emboli pass immediately through the heart to the lungs. Schmidt (*Brit. Med. Journ.*, i., 1904, p. 851) has made observations on 41 cases of carcinoma with special reference to the dissemination by the blood stream. In 15 cases carcinomatous emboli were found in the small arteries of the lungs. It appears that in cancer of abdominal organs metastatic cell groups are frequently arrested in the pulmonary arteries, but that only a small proportion of these cell masses give rise to metastatic growths in the lungs, or break through the vessel wall into the perivascular lymph stream. The greater number are destroyed by the organisation of the thrombus surrounding them, or are encapsuled and rendered inert. A small minority grow forwards through the surrounding thrombus to the capillaries and small veins, and by getting into the general circulation may be carried to any remote part of the body. The method of invasion by the blood vessels may give rise in certain cases to a rapid and very widespread generalisation of the disease, leading to a rapidly fatal termination.

Resumé of Modes of Extension and Recurrence after Removal.

We can thus distinguish local and remote paths of extension of cancer. The local invasion takes place either (1) by simple continuity, alveoli spreading out along the lines of least resistance; in the case of the uterus in the interstices between the connective tissue and muscular fibres, and in the lymph spaces; or (2) by a more extensive form of local spreading which takes place along the blood and lymphatic vessels that remain in the uterus itself. Seelig has shown that cancer may spread along the lymphatic vessels from the cervix to the body, and a similar spread may undoubtedly also take place through the blood vessels. The remote paths are the lymphatic and blood vessels which drain the uterus, either of which may convey emboli from the original growth.

Recurrence after operation may be understood by a reference to the modes of spread just described; thus recurrence may be local:

1. At the site of the original growth, or

2. At a little distance from the former site but still within the limits of the organ.

3. Recurrence may take place at any part along the course of the lymphatics leading from the organ, or in the lymphatic glands.

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4. Remote metastases may occur from emboli derived from the primary growth having been carried by the blood stream and lodged in some of the remote organs or tissues.

Relation to Fibromyoma.

In thirteen cancerous uteri removed by me fibroids were present in six of the cases, and in three of them (Cases 3, 8 and 12) the tumours were of notable size, so as to complicate the diagnosis and treatment. In three of the five other specimens present in the museum, there were also fibroids, and in two of them the tumour was as large as a fœtal head. It appears, therefore, that a very large proportion of cancers of the body occur in uteri which are already affected by fibroids, and this fact is in striking contrast to the relative rarity with which fibroids complicate cancer of the cervix. In every case the fibroids appear to have existed before the carcinoma began to develop; and the latter began in the endometrium, in some cases apparently over the fibroid, and in others certainly at a distance from it. In none of the cases is there any reason to think that the cancer began in the fibroid tumour itself, but in two of them the tumour was invaded by the cancer, the invasion being at the surface. The frequent concurrence of the two forms of disease seems to render probable the existence of some link in causation. It is well known that the presence of a fibroid frequently sets up a condition of chronic endometritis, glandular, interstitial, or mixed, and it is at least possible that the diminished physiological resistance of the endometrium brought about by this endometritis is the determining factor which sets free any matrix of cancer which may be present, and allows it to grow.

The co-existence of fibroids with cancer of the body is of great importance from the practical point of view. Any symptoms that may be present are only too likely to be set down to the presence of the fibroid, and in this way, as occurred in Cases 3 and 8 of my series, the growth of a cancer of the body of the uterus may be for a considerable time overlooked. When fibroids are present in a uterus, if the menses have ceased for a time and begun again, or if the bleeding increases, or if a profuse serous, mucous, or coloured discharge makes its appearance, especially at the climacteric, the cavity of the uterus should be explored without delay, and in case of doubt the uterus should be removed.

Symptoms.

Uterine cancer gives rise to certain symptoms sufficiently obvious to arouse the attention of the women affected, but no symptom or

group of symptoms is pathognomonic, especially in the early stage of the affection. Towards the end of the disease the well marked cachexia along with pelvic pain, irregular loss of blood, and stinking discharge from the vagina, together make up a picture seldom found in any other disease, but even when all these indications are present, it sometimes happens that they are caused by the sloughing of a simple submucous or polypoid fibromyoma. The diagnosis in every case must rest upon the objective examination of the patient, and in the earliest stages of the disease, when it affects the body of the organ, its recognition depends upon the microscopic examination of portions removed by the curette. It is necessary, therefore, that in every case of cancer or of suspected cancer, an objective examination shall be made, and it is further necessary that the examination shall be made at the earliest possible moment. Hence it is in the highest degree important that not only medical men but women themselves should be conversant with the symptoms that may indicate danger and call for immediate investigation. Twenty years ago the circumstances were different; a diagnosis of cancer of the uterus was equivalent to a sentence of death; the patients therefore put off consulting a medical man until the sufferings of the late stage of the disease compelled them, while the medical man on his part postponed examination in order that he might not deprive the patient of hope. At the present time at least one-third of the cases that are recognised sufficiently early can be cured by prompt operation. To wait until the symptoms become further developed is to run the risk of the disease in the meantime spreading beyond the reach of radical surgery. The responsibility for an immediate diagnosis in every case of suspected uterine cancer is therefore one of the most onerous burdens laid upon the medical practitioner.

In order that this responsibility may be met it is necessary to study carefully the earliest symptoms to which the presence of cancer may give rise; these are vaginal discharge of various kinds, bleeding, sometimes pain, and occasionally loss of flesh and strength. Among my 15 cases bleeding or bloody discharge was the first symptom complained of in 9, yellow or white discharge in 4, and pelvic pains in 2, in one accompanied by slight bloody mucous discharge and dysuria. The duration of the symptoms before my first examination varied from 3 months to 3 years; the average in the localised cases being 9 months, in the diffused cases 15 months, and in 2 cases which could only be curetted 2 years.

In the majority of cases the earliest symptom is a more or less constant discharge of thin serous fluid, often red stained. As the

cancer advances, and especially when it ulcerates, the discharge becomes thicker in consistence and opaque white or yellowish in colour, or becomes more or less brown or red by admixture with blood. Bleeding also occurs usually at irregular intervals, sometimes lasting for several days at a time and sometimes being absent for weeks together. With the progress of the disease bleeding usually becomes more profuse and may take the form of veritable floodings, but this usually happens only in the later stages of the affection. The occurrence of bleeding under circumstances involving active congestion or bodily exertion is a particularly suspicious symptom; thus bleeding during sexual intercourse, after active exertion, or during defæcation, always calls for prompt and thorough investigation. Increase in the amount, duration or frequency of bleeding near the expected menopause, and more especially the return of bleeding or the onset of a vaginal discharge of any kind at an interval after the menopause, is very suggestive, and should be presumed to be due to cancer until the contrary is proved.

I have examined the records of 762 women aged 50 and upwards who were seen by me for diseases peculiar to their sex during the eleven years with which this paper deals. Of this number there complained of bleeding 139, of whom 128 were married and 11 single. Of the married women 53, equal to 41·4 per cent., were suffering from cancer of the cervix or body of the uterus, or of the vagina. Of the 11 single women who complained of bleeding at the age of 50 and upwards, 7, equal to 63 per cent., were suffering from cancer of the uterus, and of these the cervix was affected in one, and the body of the uterus in six. It follows from these observations that bleeding at or after the menopause raises a strong presumption of uterine cancer, but it must not be forgotten that the disease is frequent also in women at much earlier ages. Uterine cancer is rare before 25, and uncommon before 30, but after this time becomes increasingly prevalent with increasing years.

It is a common fallacy that cancer invariably gives rise to pain. Observation proves that in the earlier stages notable pain is rare, while the disease not infrequently runs nearly its whole course without giving rise to notable suffering. This absence of pain is in a sense unfortunate, because its presence in the earlier stages would drive women to seek advice at a time when adequate relief is possible, but although no actual pain is present careful enquiry elicits the complaint of a feeling of heaviness or fulness in the lower abdomen, or a vague sense of pelvic discomfort. Sometimes when the cancer has formed a tumour of considerable size it projects into the uterine

cavity and causes severe bearing-down pains, due apparently to an attempt on the part of the uterus to expel the tumour. Severe pains of various descriptions, boring, burning, aching, shooting, in the lower abdomen, sacral region, vagina, rectum and thighs, come on at an advanced stage, but not usually before the cancer has extended beyond the limits of the uterus itself, and has invaded the connective tissue and pressed upon or irritated the large nerves in the pelvic cavity. Occasionally pain appears to be the first symptom, but careful enquiry will almost always elicit the fact that discharge of some kind has preceded its onset. Regularly recurring attacks of severe pain have been described by Simpson and by Ruge and Veit as occurring in cases of carcinoma of the body of the uterus and as being suggestive of the disease. Frommel has only seen this symptom in one case, and that not in an early stage, and in none of my cases were there pains answering to this description. The pains of cancer which come on in the late stage are not relieved by rest and are therefore usually described as being worse at night. When the disease approaches the peritoneum abdominal pain is usually complained of, and at this time widespread tenderness over the lower abdomen and some tympanites are common, the abdominal wall often feeling as hard as a board. Symptoms referred to the rectum and bladder are common, but only begin in the later stages of the disease. Piles and bleeding from the hæmorrhoidal veins are not uncommon, and frequently when cachexia has become marked, thrombosis of veins may occur as in Cases 3, 9 and 12. In the earlier stages of the disease the patients often complain of weakness and sometimes also of wasting, while at the same time they state that their appetite and digestion are good; such symptoms should always awaken the suspicion of serious organic mischief somewhere in the body. In the later stages of the disease the general symptoms of course become easy to recognise. There is marked emaciation, the complexion is of a dirty sallow hue, the mucous membranes are anæmic, there are marked lines of suffering on the face, the gait becomes stiff and awkward owing to the efforts of the patient not to increase her pain, the appetite becomes capricious, and finally bad, and late in the disease vomiting may occur, either uræmic in origin or due to carcinomatous peritonitis.

Metastatic growths are not very frequent and are therefore of minor importance. The growth much more commonly invades neighbouring organs, especially the bladder and intestines. Taking all cases of uterine cancer together, remote metastases occur in the liver in 9 per cent., the lungs in 7 per cent., and in the kidneys in 3·5 per cent. of the cases that have run their course.

Physical Examination.

It has already been said that the diagnosis of cancer of the body of the uterus depends on the results of physical examination, and the responsibility of the medical attendant for a prompt diagnosis of the affection cannot be too strongly emphasised. When a woman with suspicious symptoms consults him it is his imperative duty to employ every means to arrive at a correct opinion with the least possible delay. An immediate examination should be undertaken and should be complete and thorough. An error in diagnosis at the outset or the delay of a month in making the necessary examination, may destroy the patient's chance of a radical cure and cause her life to be sacrificed.

The physical investigation of a case of suspected malignant disease of the uterine body will now be described in the order in which it is usually carried out. The first step consists in the examination of the abdomen by the ordinary methods; by this means a tumour rising out of the pelvis may be discovered and its characters partly made out. In the case of a cancer of the fundus the presence of a lower-abdominal tumour usually imports that the disease is already far advanced or that it is associated with fibromyoma. In the majority of cases no tumour is present, and in the early stages of the disease there is not even lower-abdominal tenderness. In the later stages there is often marked lower-abdominal tenderness and rigidity, and these usually depend upon the existence of peritonitis, septic or malignant.

The next step consists in the examination of the vulva, vagina and cervix by the aid of vision and touch. These parts will be found to present no abnormal appearances but in the great majority of cases under consideration will show the usual signs of more or less advanced senile atrophy, and in a large proportion those also of virginity. Occasionally the cervix is found to be open, allowing a mass, friable and bleeding, to be felt inside the uterus, but this usually belongs to the later stages of the disease.

Bimanual examination in these patients is often difficult and unsatisfactory, and may have to be put off until an anæsthetic can be administered. The uterus frequently is found to be retroverted; in the early stages of the affection it is not enlarged, a statement which implies that it is in most of the cases smaller than that in the adult before the menopause. If now in a woman of 55 or more the uterus is found to be as large as that of a multipara of 40 it is obviously abnormal in size; it must therefore be constantly borne in mind that a size that is natural at one period of life may at another

signify abnormality of greater or less gravity. As cancer progresses the uterus increases in size, and in the later stages may become hard, irregular in form and in consistence at different parts of its surface, and finally fixed; but it is to be hoped that in the future these signs will rarely be allowed to develop. The important fact to be borne in mind is that cancer of the body in its early stages gives rise to little or no appreciable enlargement of the uterus.

During the examination there is generally more or less bleeding; as a rule the amount is slight and in gentle manipulations there is occasionally none; this bleeding during examination is suspicious but is by no means pathognomonic.

The use of the sound is the next step in the examination, and usually causes rather more profuse bleeding. The sound passes further than usual. In the senile virgin who is so frequently affected, a uterine cavity $2\frac{3}{4}$ inches in length is already greater than normal. The sound should be used as a probe and an attempt made to estimate the condition of the endometrium. Valuable information may sometimes be obtained about this, but the sensations received through the sound are very liable to misinterpretation. If the mucous membrane is smooth throughout there is probably no cancer; if the point of the sound passes over knobs and into depressions, and especially if it can be felt to sink into firm and friable or more commonly into soft and fleshy material the presumption of cancer is increased. In fungous endometritis, however, the sound also causes bleeding and is often felt to penetrate into fleshy prominences so that the information obtained by the use of the sound merely heightens the presumption of cancer and indicates the necessity for carrying the investigation further. During the examination by the bimanual method or by the uterine probe, rosy greyish, or reddish, soft, fleshy, friable material sometimes escapes from the external os and affords in women at or after the menopause very strong presumptive evidence of cancer.

The methods of examination thus far described will, in the great majority of instances, enable an opinion to be formed as to the absence or probable presence of uterine cancer; in the latter case or if doubt still remains arrangements should be made without delay for an examination under an anæsthetic, and in this connection we have carefully to consider what it should be proposed to do. Many of the patients with cancer of the fundus are nervous and frightened to a very unusual degree, and there is always increased risk to life and to reason in the administration of a second anæsthetic. Whenever, therefore, the probability is strong that cancer exists it should be arranged that if, under anæsthesia, the diagnosis is confirmed, a

radical operation should be immediately undertaken. In cases of doubt, however, where it is necessary to wait for a microscopic examination of curettings, two anæsthetics may sometimes be unavoidable.

Under anæsthesia the methods of examination so far described are in the first place repeated, and now generally yield much more definite and full information. The cervical canal is then dilated, and for this purpose I prefer Hegar's form of dilators to any of the two or three branched varieties. It is often an advantage to have introduced a laminaria tent the night before the operation. The degree of dilatation will depend upon the next step of the examination: if this is intended to be digital examination dilatation will have to be continued to No. 18 or 19 Hegar; if curetting is to be the next step No 12 Hegar will be sufficient. Even the degree of dilatation last mentioned will cause a certain amount of laceration, and the danger of implantation of cancer in a recent tear has to be borne in mind. Curetting properly carried out will provide the material for gaining information as to the structure of every part of the surface of the uterine cavity. Digital examination, on the other hand, may easily fail to give us information of a growth in the early stage while it is yet small. Curetting is therefore, in my opinion, more advantageous in all respects in these cases, and a preliminary dilatation to 12 Hegar is sufficient.

In using the curette there is in the later stages of the disease a definite danger of causing perforation of the uterus. In Case 12 this accident was narrowly escaped, and Spiegelberg tells of a case in which perforation caused in this way gave rise to a fatal septic peritonitis. The curetting should be systematic and thorough, the whole surface of the endometrium being carefully gone over in order. Long strokes should be made with the instrument so as to get as large portions as possible from the anterior wall, posterior wall, fundus, both tubal angles, and both sides of the uterus, and finally the cervical canal should also be carefully gone over because sometimes a cancer occurs in this situation and gives rise to the same difficulty in its recognition as cancer of the body. The curettings should be carefully collected for microscopic examination. After the curetting the uterus should be washed out with weak antiseptic lotion, followed by the application of strong solution of iodine, which is the most useful hæmostatic and antiseptic agent for the purpose.

Examination of Curettings.

The whole of the curettings are to be collected free from blood as

far as possible; they are then in a body embedded in paraffin, and while the paraffin is still fluid the vessel, preferably cylindrical like a test tube, is inverted on to a cork or wood block so that the curettings may gravitate to form a mass; sections taken from this paraffin block are then fixed on slides and stained by any reagent that may be preferred. In this way one section includes portions of the curettings from many parts of the body of the uterus, and any malignant structure that is present is with great probability included.

Alveoli. All degrees of structure between simple glandular endometritis and the most malignant cancer exist, and often some difficulty is found in deciding whether a particular portion of tissue shows a simple or malignant structure, but with increasing experience these instances become very much less common. In forming an opinion it is of great assistance to have as many portions of tissue for comparison as possible, and this is conveniently managed by the method above indicated. Attention has to be paid in the first place to the number of glandular acini, to the characters of the individual acini, and to their general arrangement. A great increase in the number of gland-like spaces is one of the most constant features in malignant adenoma and adeno-carcinoma, but it is at the same time one of the most uncertain, and is frequently well marked in simple endometritis. In the latter condition the superficial part of the mucous membrane nearest the surface epithelium is as a rule poor in glands and a large increase of glands lying close together in this part of the mucous membrane must be considered suspicious. In malignant disease the glandular acini frequently undergo repeated division and subdivision. In endometritis a gland is often seen to divide into two, but the process is hardly ever carried beyond this, and therefore marked subdivision of the glands is also suspicious. In well marked cases of malignant adenoma the gland-like acini often lie close together with only a fine dividing line in which is seen a row of spindle shaped nuclei. The epithelial cells lining the acini lie, as has been said, back to back instead of face to face, or, to put it differently—the space between two glands is narrower than the lumen of the gland.

The glandular acini in malignant disease are not only much divided and greatly increased in number so as to lie close together, but also show an extreme irregularity of course. A tortuosity so marked that acute angled bendings are seen sometimes to one and sometimes to the other side, strongly suggests malignant disease. In simple endometritis the course of the glands is chiefly vertical to the surface; in malignant disease they run in the most various directions, transverse and oblique.

In simple endometritis it is possible to make out the separate glands, but in malignant disease their increase in number and division gives rise often to an intricate network in which it is impossible to distinguish the individual glands.

Penetration of the glands into the muscular walls of the uterus is not a sign of malignant disease; frequently glands are found penetrating the muscular coat in a normal, or still more often in a chronically inflamed, endometrium.

Cells. Increase in the number of layers of epithelial cells lining the glandular cavities is one of the most important signs, but it is not available for malignant adenoma; in this form of cancer the acini are lined by a single layer of epithelium, often of beautiful high cylindrical shape; the epithelium frequently, however, has an irregular appearance on section due to the fact that the nuclei are placed in the cells at very varying levels. An increase in the number of layers of cells may be simulated where the section is thick or has passed obliquely across the alveolus. Sometimes the fundus of a gland is cut across and appears as a round or oval space filled with cells; in these cases a comparison with neighbouring acini usually quickly and easily solves any doubt that may arise. The regularity of the epithelium and the arrangement of the nuclei at the same height in the cells in simple cases, gives rise often in oblique sections to an appearance of zones of cells, some of the zones consisting of cells without nuclei; in the latter case the cells have been divided above or below the nuclei. In a malignant acinus there is no appearance of regular zones but the nuclei are scattered irregularly through the whole mass of cells. An increase in the number of cells causes the projection of bunches or faggots of cells into the lumen of an alveolus, and this is always to be regarded with suspicion. A similar appearance, however, is frequently met with during the early months of pregnancy in glands in the deeper layers of the decidua vera; here the presence of large collections of decidual cells would be an important indication of the nature of the specimen.

Differential Diagnosis of Curettings.

Diagnosis of cancer has to be made from other forms of malignant disease as well as from the various forms of endometritis and from the conditions which depend upon pregnancy. The stage of malignant adenoma is apt to be confused more especially with glandular endometritis, and in making a diagnosis it has to be borne in mind that in the latter affection the glands invade the muscular coat to some extent, and that they may be greatly increased in number. There is,

however, always a definite amount of inter-glandular tissue, either of the ordinary cellular type with numerous round and oval nuclei, or sometimes with streaks and patches of round-celled infiltration. The individual glands are increased in length and often corkscrew shaped or spiral, but they are always lined by a single layer of epithelial cells and as a rule the arrangement of these cells is regular, the nuclei standing at about the same level. Hesitation may arise in thick or oblique sections where the appearance of two or even more layers of cells may be given with the nuclei very irregularly placed, but in them a consideration of the specimen as a whole usually enables us to form a correct opinion. In a simple case the cells and their nuclei are fairly regular in size, and even where the cells are cut in different planes and directions, appearing here round and there oval, a correct estimate can still be formed.

In malignant adenoma there is only one layer of cells in the acini, but these are apt to be less regular in size, shape, and arrangement of nuclei, than in simple endometritis. The most characteristic appearance, however, is given by the great increase in size and number of the glands, which become greatly elongated and branched, and are so numerous in some parts that there appears to be hardly any inter-glandular tissue. This arrangement of acini is characteristic; where it can be made out that the cells are really arranged in more than one layer the evidence of malignancy is by so much the stronger. Fully developed spheroidal celled carcinoma in some of its appearances may be simulated by various other conditions. Where the alveoli are large with little inter-alveolar tissue, sarcoma may be suggested. In some cases endothelioma forms very close resemblances to true cancer, and in deciduoma malignum there is not infrequently an alveolar arrangement which at first sight may lead to confusion. In all cases, however, a careful examination of different parts of the growth, and especially of the youngest portions at the growing edges, will enable the microscopist to form a correct conclusion, and in many cases the clinical history will afford the strongest evidence in support of the correctness of his diagnosis.

To the careful observer the products of gestation can hardly ever cause serious difficulty in the diagnosis from cancer; the appearances of the chorionic villi, and the relations of collections of decidual cells to the structures in the endometrium, as well as the characters of the individual cells themselves, taken altogether, form a sufficiently characteristic picture.

Like every other mode of investigation the examination of curettings from the body of the uterus is open to fallacies and

difficulties. The evidence obtained from them is only a link in a chain, but it is one of the strongest links, and when suitable portions of tissue are skilfully collected and prepared, the evidence is conclusive as to the nature of the tissues available. It is necessary to bear in mind, however, that even the microscope will not enable us to prove a negative; in any suspected case it is most important that the curette should be carefully applied to every part of the surface of the cavity of the body and cervix of the uterus, and that the whole of the scrapings should be collected, embedded in paraffin, and cut in such a way as to give the greatest possible field for observation. If any piece of characteristic malignant tissue be present, no matter how small it may be, the diagnosis is then easily made. It is, however, possible that a malignant nodule in the wall of the uterus may be covered with normal or inflamed mucous membrane, or that the curetting may be imperfectly done or the pieces not fully collected. The microscopist can only pronounce an opinion on the portions of tissue supplied to him. With increasing experience he will be able to pronounce judgment with great confidence on the simple or malignant nature of any given curetted portion.

Diagnosis of Cancer of the Body of the Uterus.

When in a woman who is unmarried, or who has proved sterile or little fertile, serous or other discharge makes its appearance at or especially after the menopause, or where bleeding becomes excessive, prolonged, or irregular at the same epoch, a strong presumption of cancer is always aroused. A correct diagnosis must be made without delay and information is to be sought by vaginal and bimanual examination, which are, however, as a rule, of little value in the early stages of the affection; by the sound, which gives more important evidence by showing the length of the cavity, bleeding on gentle manipulation, and the presence frequently of soft friable, or firm nodular tissue in the uterine cavity; and by dilatation followed sometimes by digital examination, and always by curetting and microscopic examination of the removed fragments. In the early stage the last is infinitely the most important method of examination, and in any suspected case should be undertaken without delay. It is important to recognise that expert knowledge is necessary both in the use of the curette in these cases and in the examination of the curettings afterwards, and it is to be desired that suspected instances of the disease shall be investigated by competent observers at the earliest possible moment. In this way only can the best results of treatment be obtained.

Younger women than those described at the beginning of the last paragraph are, of course, frequently affected by malignant disease of the body of the uterus, and it is necessary, therefore, always to bear this possibility in mind. In them, however, the form of malignant disease of the body of the uterus is more commonly a rapidly fatal malignant deciduoma, and there is usually a connection with recent pregnancy, especially of hydatidiform mole, which should arouse suspicion. The occurrence of true cancer of the uterine body in women under 45 appears to be comparatively rare.

FIG. 1.—An alveolus of inverting adeno-carcinoma, showing numerous ingrowths of epithelium, many of them united by their apices.

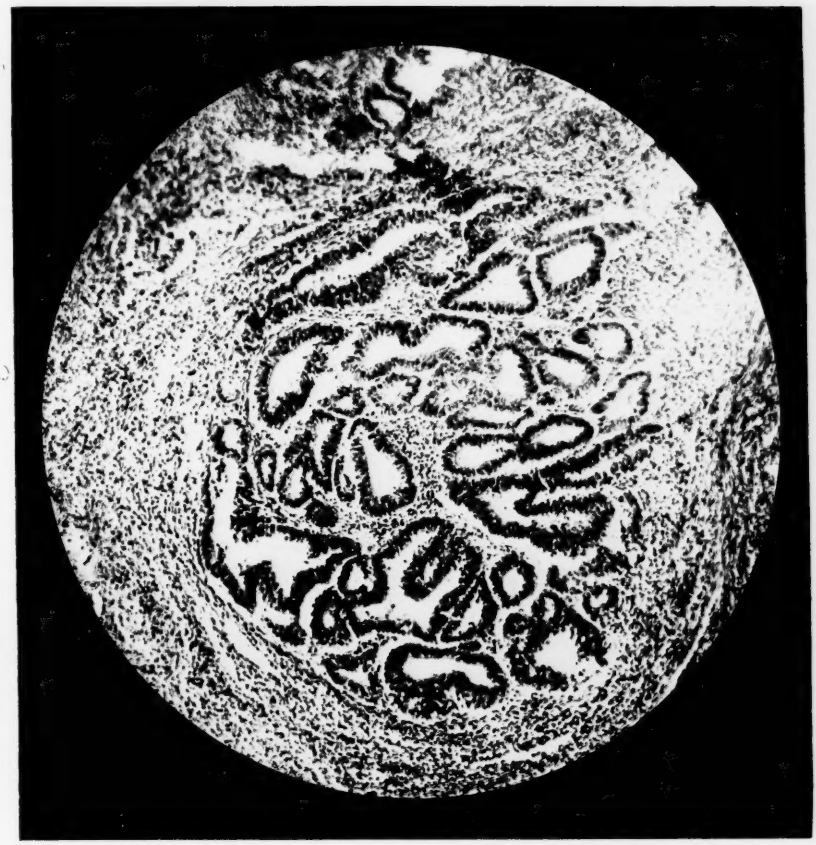

FIG. 2.—Lobule of adeno-carcinoma, everting form. Small acini lined mostly by one or two layers of epithelial cells. Small celled infiltration of stroma surrounding the lobule.

FIG. 3.—Carcinoma developed out of adeno-carcinoma. Large alveoli filled with epithelial cells, many of which are degenerated.

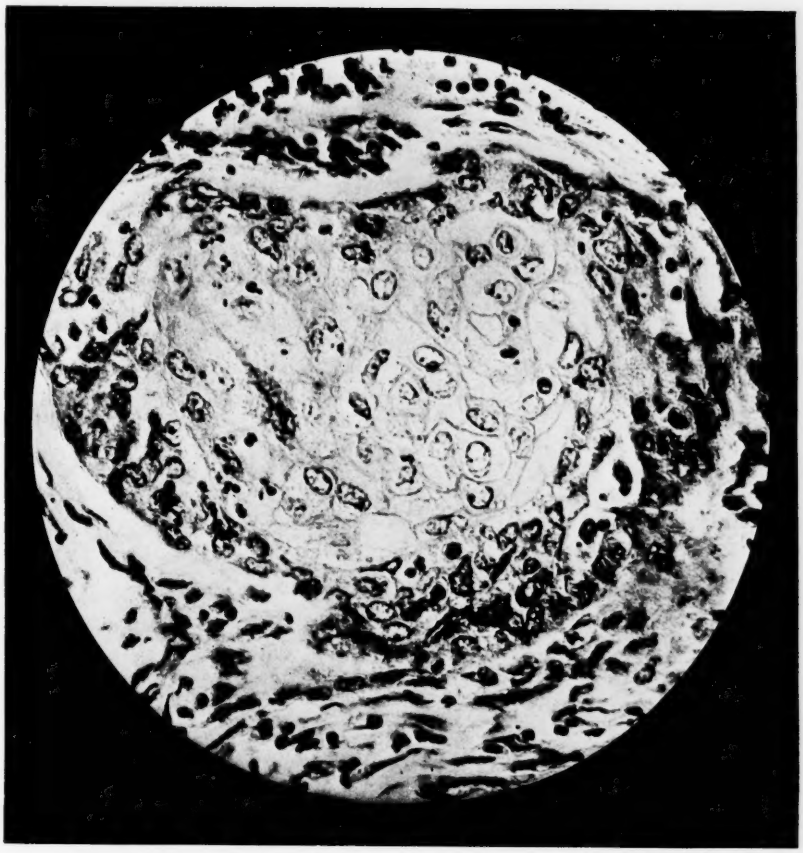

FIG. 4.—Small alveolus filled with cells that have undergone keratoid degeneration.

A Table of over Fifty Complete Cases of Primary Cancer of the Fallopian Tube.

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In the second volume of this Journal (p. 381) will be found a Critical Review on Primary Cancer of the Tube, which I prepared in the summer of 1902. Since then many fresh cases have been recorded. The study of this important condition is becoming difficult, as the published accounts of individual cases are widely scattered over British and foreign medical text-books and journals. For that reason I have drawn up the following tables for the convenience of those who are interested in the subject. They are extended from my own tables (1888, 1896, 1898), Sänger and Barth's (1896), Danel's (1899) and Le Count's (1901). I have been careful to make the references as complete as possible. Incomplete cases are excluded. Several have been more or less briefly recorded by Smyly, Zweifel, Westermark (second case), Brennecke,* Kretz,† and Boldt (*N.Y. Medical Record*, 1897, Vol. lii., p. 66). A full report of Amann's case was promised by that writer (*Monats. für Geburts. und Gynäkol.*, 1903, Vol. xviii., p. 789), but I am not aware that it has been published. Osterloh (*Zentral. für Gynäkol.*, 1895, p. 924) reported the removal of a tumour taken at the time for a right pyosalpinx; it adhered to the parietal peritoneum and simulated abscess in the abdominal walls. A year later (*Ibid.*, 1896, p. 809) he detected recurrence in the neighbourhood of the abdominal cicatrix. There was, in fact, malignant deposit. The specimen of supposed "pyosalpinx," which had been preserved, apparently unopened, was carefully examined, and proved to be a cancerous tube. The patient was still living, over a year after the operation.

* "Ueber ein Fall von primägiren doppelseitigem Tubercarcinom." *Monatsschr. f. Geb. u. Gyn.*, vol. x. p. 104.

† "Zur Casuistik der Papillome der Eileiter." *Wiener Klin. Wochenschr.*, 1894, p. 572. Woman, aged 47, one child twenty-three years old. Period regular until two years before operation, then free irregular hæmorrhages occurred. A bilateral tumour developed, Büdinger amputated the uterus above the cervix, removing with it a pair of papillomatous ovaries obstructed and greatly dilated. The papilloma showed, on microscopical examination, a tendency to pass into epithelioma, and cavities lined with cylindrical epithelium were detected in the muscular and subserous tissue of the tubes (see fig. 2 *loc. cit.*). Recovery: unfortunately no after history. Kretz, very reasonably, compares it to Kaltenbach's case (No. 3 in these tables). Le Count includes it in his tables of cases of cancer of the tube (see reference No. 37).

I have not deemed it necessary to include a table of cases of primary *sarcoma* of the tube.* Four were tabulated in my article on Diseases of the Fallopian Tubes in Allbutt and Playfair's *System of Gynæcology*. The reporters were Senger, of Breslau, Sänger, Gottschalk and Janvrin. I also noted Charles Dixon-Jones's three "myelomas" and Sänger's two instances of *deciduoma malignum* of the tube. Since the above-mentioned table of cases of primary sarcoma of the tube was prepared I have not been able to find more than one more reliable record. That report, by Von Kahlden, is to be found in the *Beiträge zur path. Anat.*, 1897, Vol. xxi., p. 275. The patient was 51 years of age, three times pregnant, the last pregnancy ending in her fortieth year. She died of pulmonary embolism after suffering for six months from bearing down pains in the pelvis, never severe, but associated with progressive emaciation. Both tubes were converted into large sarcomatous tumours, the new growth had developed between the epithelium and the muscular coat of the tube. Infection of the ovaries was beginning, whilst there were numerous deposits on the peritoneum, extending as high as the diaphragm.

An instructive table of cases of non-malignant *papilloma of the tube*, enlarged from my own table in the *System of Gynæcology*, is appended to Macrez's *Tumeurs papillaires de la Trompe de Fallope* (Paris, 1899). It includes nine cases, and since then about four more have been reported.

For the best collection of *full clinical summaries* of reported cases of primary malignant tumours of the tube I must refer the reader to Dr. Louis Danel's admirable *Essai* (see tables Nos. 26, 27, also No. 47), which includes over 35 reports, and to Stolz's monograph (see No. 44).

A full analysis of these tables would be out of place here, for the reader can scrutinise them himself, on his own account and after his own views. A useful analysis was read by Zangemeister before the Leipzig Obstetrical Society two years ago (*Zentral. für Gynäk.*, 1902, p. 690). Pathologists, I admit, do not with one accord agree that papilloma of the tube is originally an inflammatory product (hyperplastic salpingitis, Le Count; *papillome endo-salpingitique*, Macrez), but the relatively new cases in these tables tend to confirm the theory that cancer usually develops from papilloma, itself, as a rule at least, an inflammatory product, a theory which I have supported from the first, on the ground of the clinical

* Note No. 22 in these tables. The sarcoma involving the cæcum may have been a coincidence. Falk's original report must be studied.

history of Spencer Wells's case of papilloma as compared with Knowsley Thornton's case of cancer (No. 2 in these tables). Le Count notes how in Spencer Wells's case of papilloma, where the patient recovered and lived for over sixteen years after the operation, the exuberant masses must have been products of inflammation, not new-growth of doubtful character. Kaltenbach's tumour (No. 3) was so doubtful that it was taken at first for a cancer, then, on a further examination of sections, defined as an innocent papilloma. Lastly, as I ascertained from correspondence with Professor Von Herff, Kaltenbach's successor, the patient died of recurrence of the growth. Let the reader now turn to No. 30, under which number I have included several details of high importance. The operator removed a diseased left tube through a vaginal incision, and a well-known pathologist found that the tumour which it bore was an innocent papilloma. Its investing epithelium formed a uniformly single layer with no invasion of stroma. The right tube appeared to be quite normal; it was fixed to the vaginal wound. Eleven months later a fungating mass protruded into the vagina. A piece of the mass was removed and found by the same pathologist who had examined the left tube to consist of undoubtedly malignant papilloma,* and Fabricius, the operator, declared that he could introduce his finger into the greatly dilated cavity of the right tube, finding it full of malignant growth. I must also turn attention to the strong clinical homology between Spencer Wells's case of papilloma of inflammatory origin and No. 37 in these tables. In both the abdominal ostium was open and in both there was ascites, hence the probability that the disease in the tube in No. 37 was originally papilloma of inflammatory origin, becomes very strong, Kaltenbach's and Fabricius's cases supporting the theory.

It may reasonably be urged that the papilloma, innocent or malignant, in all these cases might have been a new-growth and not an inflammatory product from the first, but a history of pelvic inflammation is very common in the tables; there is no proof that it was absent in these cases, and the probability that tubal papilloma is at first an inflammatory product like a venereal wart is very strong. Even when there is no distinct evidence that cancer is an evolution of salpingitis, it seems probable that in such a case it has developed in a tube long obstructed and crippled by old-standing inflammation.

Amongst the advocates of the anti-inflammatory theory, as it may conveniently be termed, is Witthauer (No. 33), who maintained

* Compare Kretz *loc. jam. cit.* The nature of his tumour was very doubtful. He does not admit that papilloma is of inflammatory origin.

that there was no trace of previous salpingitis in his case, but his description suggests that the bilateral tumour developed in a well-marked double hydrosalpinx. Graefe's case (No. 40) seems very suggestive in this respect; a relatively small cancerous mass was detected inside a large hydrosalpinx, which had been detected as a tumour two years and a half before operation. The hydrosalpinx in both these cases was most probably due to salpingitis. Indirect relationship of inflammation to cancer is discussed in the original report of Russell Andrews and Herman's case (No. 46).

As for sources of *fallacy* in respect to the primary seat of cancer, we must ever bear in mind Winter's case (*Zentral. für Gynäk.*, 1887, p. 497), where a hydrosalpinx lay in contact with a cancerous ovary and a pedunculated malignant mass projected into the cavity of the tube, and Fabricius's "Perforation eines malignem ovarialtumor in die Tube" (*Wien. klin Wochenschr.*, 1896, Vol. ix., pp. 59 and 74), where a small cystic cancerous ovary adhered to a large hydrosalpinx which contained masses of cancerous substance floating free in its lumen. This substance had entered the tube through a perforation communicating with the diseased ovary. The patient in this instance had been subject to a free bloody discharge, such as is often observed in primary tubal cancer. The pathologist might suggest that No. 24 is suspiciously like the two cases just noted, but the authority of M. Pilliet, who examined both tube and ovary, is high, and he maintains that the tube was the primary seat of the disease. The appearance of a hydrosalpinx perforated by cancer from the adjacent ovary is not that of a hydrosalpinx the seat of primary cancer. The drawings of Fabricius's case (*loc. cit., vide supra*) where the former condition existed may be compared with the illustrations of Thornton's case (No. 2), published in the *System of Gynæcology* (Fig. 208, p. 814), and in Hubert Roberts's *Outlines of Gynæcological Pathology and Morbid Anatomy* (Fig. 32, p. 144). In my own operative practice I have met with at least two cases where papilloma from a large ovarian cyst has invaded a dilated tube, but ovarian papilloma is from the first a true new-growth independent of inflammation (see Victor Bonney on the "Cytology of Papilliferous Ovarian Cysts," *Archives of the Middlesex Hospital*, Vol. iii., with abstract in this JOURNAL for last September, p. 245). It is pathologically quite different from the papillomatous growths which develop on the tubal mucous membrane, or if otherwise pathologists have as yet failed to demonstrate any close relation or identity between the two.* The truth about primary cancer of the

* Kretz *loc. jam. cit.*, p. 574, considers that tubal and ovarian papilloma may be identical. Warts of inflammatory origin are sometimes seen on the surface of the ovary. See also Kossmann in Martin's *Krankheiten der Eierstöcke*, p. 938, footnote.

ovary in relation to the tube is that the new-growth rarely invades the tube; it is the serous coat of the tube which is the first to become infected, whilst primary tubal cancer begins on the mucous membrane.

Many *clinical symptoms* of interest will be found inscribed in these tables. I have already turned attention to the homology of No. 37 to Spencer Wells's case of innocent papilloma, the abdominal ostium being open in both, and ascites developing. A similar homology exists between No. 39 and Doléris's case of innocent papilloma, the uterine orifice being open in both so that quantities of watery fluid escaped from the vagina—hydrops tubæ profluens in fact. Thirdly, Witthauer's case (No. 33) is an instance of closure of both ends of the tube, so that there was no sanious discharge, yet let it be remembered that the dilated cancerous tubes contained much bloody fluid. In examining Thornton's case (No. 2) I found much bloody serum and clot, but as the uterine end of the tube was patent there was sanious vaginal discharge. These cases are object lessons explaining the variation of symptoms so evident in the tables. But, as I noted many years ago, sanious discharge is a cardinal symptom of high value in diagnosis, whilst the reason why it may be absent is made clear by No. 33.

As for *age*, in Nos. 11, 13, 28, 35 (age 70, the oldest case) 38 and 52, the evidence that the cancer developed in an old hydrosalpinx or otherwise diseased tube seems strong. The association of an attack of typhoid fever with the development of cancer in No. 38 is of much interest. Only four cases (Nos. 4, 21, 29 and 32) were under forty years of age. These tables distinctly indicate that primary cancer of the tube usually occurs near the menopause—whether before or after.

The last three cases (51 to 53) are the most doubtful in the whole series. I have analysed them elsewhere. Probably the "cyst" was really the outer part of the dilated tube, as the narrower part of a hydrosalpinx opening into the wider outer portion is not rarely taken for the abdominal ostium.

Lastly, but not least, these tables include notes of the *surgical treatment* of primary cancer. As might be expected, it is not highly satisfactory. The removal of the tube alone is unsurgical. The uterus and the opposite appendages should be taken away with the tube and the corresponding ovary. The long immunity from recurrence in No. 43 is suspicious, suggesting that the papillomatous mass in the tube was really innocent. Associated with several other

cases already noted, especially No. 3, it teaches us how prognosis, even on microscopical evidence, may be as difficult as diagnosis.

ADDENDUM.

Since I prepared these tables my attention has been directed to a valuable monograph by Dr. H. Peham, of Vienna, entitled "Das primäre Tubenkarzinom" (*Zeits. für Heilkunde*, 1903, Vol. xxiv., Surgical Section, p. 317). The author does not publish any tables, but after the manner of Danel and Stolz, arranges his cases in a series of short clinical notes. The following were not included in my tables, to which they here form a supplement. I have excluded incomplete or purely pathological reports by von Franqué, Börner and others. Peham's monograph contains copious references; the following reports are taken direct from that work, excepting Nos. 60 and 61, which I condensed from Quénu and Longuet's original article on tumours of the tube in the *Revue de Chirurgie*, another paper of great merit, including tables of cases of all forms of tumour affecting the oviduct.

Primary Cancer of the Fallopian Tube.

No. 54. Age 49. One labour, premature, 16 years. Period becoming irregular. Sudden attack of retention of urine when in good health; immediately sought medical relief. Two large swellings behind uterus. Inguinal and supra-clavicular glands swollen. Vaginal extirpation of uterus and appendages. Papillary carcinoma of *both* tubes; small cyst of left ovary. Recovery; died in about three years of perforative peritonitis, the cæcum being infected; the vagina, bladder, rectum and retro-peritoneal glands were also involved. (Zangemeister).

No. 56. Age 47. Nullipara, married. Period regular. For a year sacral pains and hæmorrhages, followed by sanious watery discharge and emaciation. Pelvic tumour, size of a goose's egg, to left of uterus. Uterus and appendages removed by abdominal section; left tube adhered to small intestine. *Left* tube formed a tubo-ovarian cyst; papillary cancer of *right* and *left* tubes; the tubo-ovarian portion of left tube not involved. Recovery. Recurrence within two years and death. (Zangemeister).

No. 56. Age 49. Married, last child 20 years. Period regular. For six months could not retain urine; sacral pain, then abdominal tumour. Swelling, size of a child's head, to left of uterus. Appendages removed by abdominal section; tumour and right tube

adherent to intestine and omentum. Metastatic deposits in mesentery and parietal peritoneum. *Right* and *left tubes* dilated, filled with masses of papillary cancer; ovaries free. Recovery. Recurrence; death within six months. (Zangemeister).

No. 57. Age 47. Four children, one abortion. Period still regular. Swelling in right breast one year. Abdomen seemed increasing in size for four or five months; recently rapid increase. A pair of cystic tumours detected in hypogastrium, pushing uterus upwards and forwards. Removal of the appendages. Cystic tumour of both ovaries; *right* and *left* tubes dilated, filled with cancerous growths more or less papillomatous; secondary infection of the ovaries. Recovery. Three months later amputation of right breast. Recurrence of pelvic tumour; mass removed from uterus. Death thirteen months after removal of appendages. (Peham; operator Chrobak. Reporter apparently considers that the cancer of the tube was primary, independent of the growth in the breast, which was removed at the patient's home and not examined; the axillary glands were enlarged).

No. 58. Age 44. Married 26 years; several pregnancies, two abortions, one followed by pelvic inflammation. Sanious watery discharge between the periods for several years. For four months abdominal pain and feeling of fulness; rise of temperature. Sudden attack of hæmorrhage. Ascites discovered; pelvic organs hard to define. Abdominal section; great quantity of dark ascitic fluid. Removal of both appendages. Papillomatous cancer of *right* and *left* tubes, the right forming a very large tumour; ovaries not cancerous. Recovery. Rapid recurrence, with ascites, dying eleven months later. (Peham—operator, Chrobak).

No. 59. Age 45. Ten years; abortion and pelvic inflammation. Period regular. Recently free sanious watery discharge and pelvic pain. A pair of tumours in hypogastrium, pushing uterus forwards. Abdominal section, removal of appendages, strongly adherent, and of part of the omentum, which was covered with cystic tumours, some as big as a plum. Left ovary not removed. On eleventh day rupture of wound during fit of coughing, closed by suture. Recovery. Recurrence within six months. Papillomatous cancer of *right* and *left* tubes; the left much enlarged and obstructed, the cancer had invaded its muscular walls. Right ovary normal. (Peham, reporter and operator).

No. 60. Age 42. Period regular; free leucorrhœa. Polypus removed and curette applied some time before operation (precise time

not given in Quénu and Longuet's original report); discharge, however, continued, and for several months there were attacks of uterine hæmorrhage. Tumour, continuous with the uterus, reached as high as the umbilicus. Supra-vaginal amputation of uterus with both appendages (Quénu). Fibroid uterus; right tube obstructed, inflamed, free from cancer; right ovary normal. *Left* tube blended with a very large medullary tumour; true carcinoma, including tubular elements, such as I detected in No. 2 in these tables. "It was impossible to detect the left ovary, although the mass was cut through in all directions." Recovery; patient in good health two years and two months after the operation. Compare Nos. 45 and 50, Mr. Bland-Sutton's cases of tubal cancer associated with uterine fibroid; see also case 61 (Quénu and Longuet, "Des tumeurs des trompes," *Revue de Chirurgie*, 1901, Vol. xxiv., p. 764. I have quoted direct from this monograph, which includes good tables, and has, like Peham's paper, been apparently overlooked by British and American writers).

No. 61. Age 51. Period regular; one child at 20. Mother suffered when 70 from a uterine tumour. Three months lumbar and hypogastric pains, chiefly on the left. For one month free leucorrhœa, then severe uterine hæmorrhage for four days, relieved by rest in hospital. Tumour in right fornix and another in front of uterus. Supra-vaginal hysterectomy with removal of appendages (Quénu). Large uterine fibroid, burrowing in the right broad ligament. Left tube and both ovaries free from cancer. *Right* tube obstructed at the abdominal ostium (as was the left); in its middle portion was a fusiform body of the size of a large broad bean, smooth, firm, lardaceous on section, and purely cancerous, invading muscular coat of tube. Death from recurrence two years and one month after operation. See note on Nos. 45 and 50 in abstract of No. 60 above. (Quénu and Longuet, *loc. cit.*, p. 766).

No. 62. Age 49. One pregnancy 25 years ago. Period regular. For several months watery yellowish discharge; continuous abdominal pain for five weeks. Tumours detected and diagnosed as fibroids of the uterus. Abdominal section; removal of *right* and *left* tubes, cancerous and as big as large intestine; uterus adherent to rectum, not removed. Recovery; period never appeared afterwards. Recurrence three years later. Exploratory incision; cancerous deposits in wall of sigmoid flexure of colon and mesentery; pelvic glands infected. General condition still fairly good. (Brennecke's case, to which I have referred, from Peham's abstract).

PRIMARY SARCOMA OR MIXED TUMOUR OF THE FALLOPIAN TUBE.

These highly interesting cases collected by Peham may be added, with Von Kahlden's, to the table of 4 cases of primary sarcoma of the tube which I prepared for Allbutt and Playfair's *System of Gynæcology* (1st edition, pp. 834–5). The total will then be only seven, of which two at least were mixed growths.

No. 6.* Age 51; one child 29 years. Regular till a year before operation. For three months abdominal swelling, recently pelvic pain after exertion. Tumour, size of a child's head, in right of abdomen; on left side another reaching to umbilicus. Abdominal section. Both appendages removed; strong adhesions to intestine and parietal peritoneum. Uterus and right ovary (atrophied) not removed. Death on second day "from heart failure." Sarcomatous polypus found in uterine cavity. *Right* tube, a large cystic tumour characteristic retort-shape, containing brown sanious fluid, papillomatous masses as big as beans on the inner wall. *Left* tube with left ovary underneath it, flattened, apparently not infected; medullary masses sprang from inner wall of tube obliterating lumen. The tumour tissue from both tubes was of a very mixed character, mostly sarcomatous, bearing on the surface papillomatous masses of a distinctly cancerous nature. (Von Franqué).

No. 7. Age 43; 2-para, last pregnancy 23 years. Catamenia regular. Swelling of abdomen $2\frac{1}{2}$ months; no pain; vesical irritation; emaciation. Tuberous masses in lower part of abdomen; pedunculated tumour to right and a firm tumour to the left. Abdominal section; removal of both appendages. Uterus very large, not removed. Metastatic deposits on peritoneum of bladder and Douglas's pouch. The right tumour formed a hydro-salpinx free from new-growth. The *left* tube formed a cyst of the usual shape, containing an odourless puriform fluid. Cauliflower masses sprang from its inner wall; they were made up of mixed sarcomatous and carcinomatous elements, as in No. 6. Alive eighteen months after operation, with ascites, masses in abdomen and a cancerous ulcer on the posterior lip of the os externum. (Schäfer—operator, Krönig).

I doubt if the alleged primary nature of the tubal tumours in Nos. 6 and 7, sarcoma series, will be universally admitted. What was the precise import of the sarcomatous polypus in the uterus in No. 6? What caused the enlargement of the uterus in No. 7? These questions remain unsolved.

Thus over 60 cases of primary cancer of the Fallopian tube have been fully recorded, and "the cry is still they come!"

* *i.e.*, in sarcoma series.

No.	Age, married or single	Childen; menstruation.	Size of tumour.	Chief symptoms.	Duration of symptoms before operation.	Operation; Result.
1*	46, M, (3yrs.)	Abortion (?) 1½ years before operation	R.	Tumour to right of uterus after convalescence from typhoid; then moderate leucorrhœa; encysted serous perimetritis to left	About 1½ years	Removal of tube. Died 6th day
2	48, M.	1 (22 years; 6 months' menopause	R.	Sanious, watery discharge; perimetritis after curetting; then tumour to right of uterus	3 years	Removal of tube. Lived 10 months, 3 weeks
3	50, M.	Sterile; 6 months' menopause	R. and L.	Sanious, watery discharge; club-shaped swelling right fornix, and pain 8 weeks before operation; elastic tumour left fornix; small subperitoneal uterine myoma	4 years	Removal of tube. Recurrence within 18 months (von Herff, Dec., 1894)
4	36, M.	Sterile; ?	L.	Hypogastric pains, fever, swelling in left side of pelvis	"For a long time"	Removal of tube. Free from recurrence and in good health nearly 7 years after (Veit, Jan., 1895)
5	46, M.	Sterile; regular	R.	Uterus pushed to right by a left hydrosalpinx; a tumour right side of pelvis; hypogastric pain	Hypogastric pain 2 years.	Removal of tube. Recovery. Recurrence within 10 months. "The patient must have died soon afterwards"
6	46, M.	1 child; still regular	R. and L.	Free watery discharge; abdominal pain; emaciation; two tumours felt through parietes	About 9 months	Removal of uterus and appendages. "Lived for about a year and a half"
7	45, S.	1 child (20 years); still regular	R. and L.	Hypogastric pain; metrorrhagia; tumour in right side pelvis; smaller to left and above uterus	1 year	Removal of tube. Recovery. Recurrence 2 months. Death in 5 months
8	45, M.	1 child (20 years; still regular, scanty	R.	Five months' sanious discharge; symptoms of "pan-salpingitis." Uterus dilated shortly before operation; nothing found in it	5 months	Removal of tube. Recovery. No recurrence 7 months later
9	56, M.	Sterile; regular	R.	Sanious serous discharge; dysuria. Large tumour, feeling like a myoma, on right side	1½ years	Removal of tube. Recovery. "Alive and free from recurrence 1 year and 7 months after operation"
10	55, ?	?	R.	Hypogastric pains; bloody discharge. Fluctuating tumour right side of pelvis, right iliac fossa, and Douglas's pouch	2 months	Removal of tube. Recovery. Free from recurrence a year later; "afterwards lost sight of"
11	60	Sterile; menopause 52	R.	Attack of pain right iliac fossa; nodulated swelling in hypogastrium; no discharge	4 months	Removal of tube. Recovery. Recurrence in 6 months. Death one year after operation

Character of tumour.	Other parts involved.	Operator.	Reporter and reference.
Cancerous papillomatous growths in abdominal end of tube; ostium communicated with a pus cavity	Cancerous nodules in vesico-uterine pouch; enlarged pelvic glands; large abscess of right ovary; suppuration of left tube and ovary	Martin, Berlin	Orthmann, 'Zeitschr. f. Geburtsh.,' vol. xv, p. 212
Large, soft, cancerous mass growing from tubal walls; ostium closed; sanious serum in tubal canal	Right ovary small, cancerous; old inflammation left appendages; recurrence in stump of left appendix; secondary deposits uterus, bladder, vagina, and lumbar glands	Thornton	Doran, 'Trans. Path. Soc.' vol. xxxix, p. 208, and vol. xl, p. 221
Medullary masses in both tubes. Possibly innocent papilloma at date of operation	None at operation. Recurrence on both sides, chiefly left	Kaltenbach	Kaltenbach, 'Centralbl. f. Gynäk.,' 1889. p. 74; id. and Eberth, 'Zeitschr. f. Geburtsh. u. Gynäk.,' vol. xvi, 1889, p. 357; Von Herff, private correspondence, Dec., 1894
Cancerous papillomatous masses inside pyosalpinx	No other parts involved	J. Veit	Veit, 'Zeitschr. f. Geburtsh u. Gynäk.,' vol. xvi, 1889, p. 212; private correspondence, Jan., 1895
Right tube contained mass of true medullary cancer (large alveoli and scanty stroma)	At operation no other parts cancerous; pint of sanious fluid in left tube, which was not removed. Ten months later hard secondary deposits in abdomen; ascites	Landau	Landau and Rheinstein, 'Archiv. f. Gynäk.,' vol. xxxix, 1891, p. 273, and private communication
Soft villous masses in dilated tubes; "carcinoma papillomatosum"	Uterus, ovaries, and adjacent parts healthy (uterus removed at the operation)	Zweifel	Zweifel, 'Vorlesungen über klin. Gynäk.,' 1892, p. 139, and private correspondence
Papillomatous cancer of tubes; cystic degeneration of ovaries and tubes	At operation right ovary involved; at death endometrium, pelvic glands, liver	Westermark	Westermark and Quensel 'Nordiskt med. Arkiv,' vol. xxiv., 1892,† and private correspondence
Papillomatous cancerous mass, "as big as a kidney," in outer part of tube; the uterine end of tube free from disease for an inch and a half	None; right ovary "normal except for adhesions"	Sänger	Sänger, Martin's 'Krankheiten der Eileiter,' 1895, p. 253
Large sausage-shaped tube; exuberant papillomatous cancerous masses on inner walls	No other parts involved; right ovary atrophied; no trace of cancer in its substance	Leopold	Fearn, 'Arbeiten aus der königlich. Frauenklinik,' vol. ii, p. 337; Leopold, private correspondence
Villous epitheliomatous mass springing from tubal mucosa; much clot and serum in dilated canal of tube	No evidence of any extension of cancer; uterus and opposite appendages normal	Anger	Tuffier, 'Annales de Gynécol. et d'Obst.,' vol. xlii, 1894, p. 203, and private correspondence
Spongy mass cancer inside tube, which was obstructed at abdominal end and connected with a cystic ovarian tumour	"Evidence of infection beyond the limits of parts removable by operation;" cancer on surface of ovarian cyst. No necropsy	Cullingworth	Cullingworth and Shattock, 'Trans. Obst. Soc.,' vol. xxxvi, 1894, p. 307; private communication, and personal inspection of specimen

No.	Age, married or single	Children; menstruation.	Size of tumour.	Chief symptoms.	Duration of symptoms before operation.	Operation; Result.
12	43, S.	3 children; menorrhagia 3-weekly	R. and L.	Pain, fever, and dysuria after exertion, 19 days before operation; small hypogastric tumour developed; torsion of an ovarian pedicle suspected	?	Removal of tube. Death 3 weeks, a few hours after second abdominal section for intestinal obstruction
13	59	? menopause at 53	R. (and L. ?)	Purulent, acrid discharge; escape of pus; tumour to right like a pyosalpinx; inguinal glands enlarged	2 months	Vaginal hysterectomy Recovery. Death 6 months later, fortnight after excision of enlarged inguinal glands
14	58, M.	1 child; menopause 12 years	R.	18 years swelling of abdomen; recently pain, ill-health, and increase in size of tumour	18 years	Abdominal hysterectomy. Incomplete operation; convalescent when report was published
15	46, M.	3 children; period 3-weekly	R. and L.	2 months amenorrhœa, then uterine hæmorrhage and hypogastric swelling, disappearing after colicky pain; free "serous leucorrhœa;" mass filling both fornices and Douglas's pouch	8 months	Removal of tube. Recovery; 8 months after operation a mass the size of a fist in the pelvis
16	40, M,	1 abortion; regular before illness	R. and L.	Yellow discharge 7 mos.; hypogastric pain; period ceased 3 months, then came on again; oval tumour reached above umbilicus	Over 7 months	Removal of tube. Recovery; died 7 months after operation; no necropsy
17	45, M. 20 yrs.	Sterile period irregular; dysmenorrhœa	L.	Dysuria; pain in defæcation; hypogastric swelling; large pelvic tumour, very tender; uterus anteverted and fixed	1 month	Removal of tube. Recovered (left appendages removed); well a few months later

Character of Tumour.	Other parts involved.	Operator.	Reporter and Reference.
Papillomatous cancer of both tubes; right "tubo-ovarian cyst"	Ovaries and uterus free from cancer. No trace of malignant disease found in abdomen after death	Warneck	Warneck, 'Nouvelles Arch. d'Obstet. et de Gynéc.,' 1895, p. 81
Papillomatous cancer of right tube removed with entire uterus (left tube and ovary too adherent for removal); pus in tube	Inguinal and retro-peritoneal glands; left tube secondarily (?) affected after operation; it contained pus. See original report	VonRosthorn (vaginal extirpation of uterus and right appendages; left tube not removed)	Von Rosthorn, 'Prager Zeitschrift f. Heilkunde,' vol. xvii, 1896, p. 177
Papillomatous cancerous mass in dilated tube, which communicated with a large ovarian cyst	No sign of cancer in opposite appendages, uterus, and peritoneum	Chrobak (uterus and appendages removed, but a piece of the ovarian cyst could not be removed and was fixed to stump of uterus in abdominal wound)	Knauer, 'Centralbl. f Gynäk., 1895, p. 574
Papillomatous cancer of tubes, which were dilated and full of serosanguineous fluid; chondrification of part of wall of left tube	No sign of cancer in adjacent organs at operation	Lebedeff	Miknoff, Péan, 'Diagnostic et Traitement des Tumeurs de l'Abdomen,' vol. iii, 1895, p. 564.
Papillomatous cancer of tubes; right tube formed a large cyst; left tube could not be removed; it was united by malignant deposit to adjacent structures	Metastatic deposits on visceral peritoneum and omentum; a little ascites	Fischel	Fischel, 'Prager med. Wochenschrift f. Heilkunde,' vol. xvi, 1895, p. 143.
Malignant papilloma of left tube; left ovary, right tube, and right ovary healthy	Adherent small intestine, possibly infected	Eckardt	Eckardt 'Arch. f. Gynäk.' vol. liii, 1897, p. 183.

No.	Age, married or single	Children; menstruation.	Size of tumour.	Chief symptoms.	Duration of symptoms before operation.	Operation: Result.
18	45, M.	1 child, 23 years; pregnancy normal	R. and L.	Dysuria; pain; fluctuating mass on each side of a fibroid uterus; no discharge; high temperature	14 days	Removal of uterus and appendages; Recovery; death 7 months later from recurrence
19	46, M.	3 children, last 23 years; menorrhagia 3 years	R. and L.	Leucorrhœa and pains in left iliac fossa; swellings in each lateral fornix	Over 1 year (hypogastric pains 3 years)	Removal of uterus and appendages; Recovery (?) June 2nd, 1897
20	43, M.	0	R.	Leucorrhœa after rigor (?); 4 months later abdominal pain; watery discharge; similar attack over 3 months afterwards; swelling of both fornices; free watery discharge	Over 10 months	Removal of tube. Recovery; no recurrence detected on examination 14 months later
21	39	?	R.	Alternations of amenorrhœa and menorrhagia, ovoid movable tumour in front and to left (*sic*) of retroverted uterus; history of previous pelvic inflammation	1 year	Both appendages removed; tumour of right tube as big as an egg; twisted on its pedicle; left tube seemed suspicious; recovery (?)
22	53, M. 32 yrs.	0 menopause 47	L.	Pain left iliac fossa; sanious discharge; big swelling left fornix	3 months	Vaginal hysterectomy; both appendages included; recovery; death 7 mos.; cæcum involved in a malignant mass
23	45	Catamenia irregular	R.	Serous discharge; cyst right fornix aspirated; bloody serum escaped; tumour developed left fornix	6 months	Vaginal hysterectomy; operation recent when reported; recovery
24	55	?	R.	No history	?	Right appendages removed; cancerous masses seen; *sur le scrotum* (*sic* ? uterus) *l'ovaire et les annexes*? recovery (?)
25	45	0 children menopause 1 yr.	L.	Serous discharge; crampy pains; mass behind uterus and to left	?	Removal *per vaginam* of very soft tumour, size of hen's egg; universally adherent; recovery (?)
26	40, M.	2	R. and L.	Abdomen twice tapped; fluid like dark beer; masses in left fornix; uterus mobile; fluid collected again rapidly after tappings	4 months	Both tubes removed with small cystic ovaries; pleural effusion during convalescence; twice tapped; recovery; recurrence distinct within 6 months

Character of tumour.	Other parts involved.	Operator.	Reporter and reference.
Each tube formed a large convoluted tumour full of malignant papilloma	Intestine probably infected through "numerous firm adhesions" separated at operation	Watkins (Chicago)	Watkins, 'Amer. Gynec. and Obstet. Journal,' vol. xi, 1897, p. 272; Ries, 'Primary papilloma and primary carcinoma of the Fallopian tube,' Jour. Amer. Med. Assoc., vol. xxviii, 1897, p. 962.
"Carcinoma villosum cylindrico-epitheliale" of both tubes; left most affected; ovaries healthy	A small area of cancer in canal of cervix, which Hofbauer declared to be independent of the tubal disease. See original	Schauta	Hofbauer, 'Archiv f. Gynäk.,' vol. iv, 1898, p. 316.
Right tube size of a Bologna sausage, full of malignant papilloma	None	Meredith	Hubert Roberts, see 'Trans. Obstet. Soc.,' vol. xl, p. 189.
Cauliflower mass, sprang from mucosa of outer half of tube, "undoubtedly an adeno-carcinoma" (Slaviansky)	"No other organ appeared to be affected;" scrapings from uterus *before* operating showed no sign of cancer	Ott	Stroganoff, 'Cancer primitif de la Trompe de Fallope droite,' *Annales de Gynéc.*, vol. xli, 1894, p. 332.
Left tube cystic, containing typical cancerous growth; left ovary, uterus (?) and right appendages healthy; recurrent mass proved to be sarcomatous (see text)	Growth of uncertain nature on endometrium near right cornu (see original report)	Falk	Falk, 'Ein Fall von primaren Tuben carcinom,' *Therapeutistisch. Monatsschrift*, June, 1897, p. 313 *et seq.*
Primary cancer cystic right tube		Id.	Id 'Deutsche Med. Wochenschr.,' March 31, 1898, supplement, p. 43.
Outer part of tube dilated, filled with soft mass of malignant papilloma	"L'ovaire est atteint par contact"	Péan	Pilliet, "Epithelioma de la trompe utérine," 'Bulletin et Mém. de la Soc. Anat. de Paris,' 1897, p. 956.
Carcinoma papillare alveolare		Ott	Jacobson, 'Petersburg geb. u gyn. Zeitschr.,' 1898 (see Stolz).
Papillary cancer of tubes infecting ovaries (for question of primary seat of disease see Danel, *loc. cit.*, p. 54)	Omentum, sigmoid flexure of colon; mass of glands left supraclavicular region, disappeared a few days after operation	Duret	Danel, 'Essai sur les Tumeurs malignes primitives de la trompe utérine,' Lille, 1899, p. 47.

No.	Age, married or single	Children; menstruation.	Size of tumour.	Chief symptoms.	Duration of symptoms before operation.	Operation: Result.
27	45 M.	1 child, catamenia regular	L.	Debility; felt weak in legs; no pelvic pain; no bloody discharge; mass size of fist behind uterus and in left fornix	8 months	Left tube removed; right appeared healthy; recovery; death in a few months after development of mass; right side pelvis and intestine obstructed
28	60 M.	0 children	L.	Cherry-coloured watery discharge, first noted after fit of coughing; abdominal pain a few months later; swelling to left and behind uterus developed shortly before operation	11 months	Left tube & small cystic ovary removed; dense adhesions; right tube and ovary appeared healthy; recovery; death in 13 months, after repeated tappings
29	35 M.	3 children catamenia regular	L.	Pains left iliac fossa; white discharge; emaciation; tumour size of fist in left fornix	About 9 months	Removal of left tube and ovary; tube strongly adherent to large intestine
30	41	Catamenia regular; multipara	R.	Watery discharge before and after period menorrhagia; pelvic pains radiating to left knee; mass in left fornix; after operation right tube developed into a large tumour	1 year	Left tube and uterus removed through vagina; right tube seemed normal, and was sutured to vaginal wound; eleven months later fungating mass projected into posterior fornix; finger passed into right tube, which was full of soft papillomatous mass; patient alive, but very ill over 1½ years after operation
31	41 M.	2 children 2 abortions	R.	Severe pains; large mass right side pelvis; watery discharge 14 days after period	1½ years	Right tube removed through vagina; recovery; rapid recurrence 6 months; removal of uterus without left appendages; 8 months later large hypogastric tumour discharging into rectum and refilling
32	Over 35 M.	Nullipara (? possibly aborted 15 months before operation) Dysmenorrhœa	R.	Hypogastric pains (had suffered before from lead colic); then pains in *left* side pelvis; elastic tumour size of orange right fornix and Douglas's pouch; small tender mass left fornix	Over 18 months	Abdominal incision; right tube and ovary and left tube removed; stray adhesions to uterus and intestine right side; recovery; 20 months later mass in pelvis; inoperable
33	55 M.	1 child, menopause 2 years	R. and L.	Hypogastric pains; left tumour apparently cystic; emaciation	4 months	Reml. of appendages; intestinal adhesions around left tube; recovery; 3 months later no sign of recurrence

Character of tumour.	Other parts involved.	Operator.	Reporter and Reference.
Left tube dilated; obstructed; exuberant malignant papillomatous growths; several ozs. of clear lemon-coloured fluid	Deposits on serous coat of uterus and pelvic peritoneum	Delassus	'Danel, ib.,' p. 107.
Obstructed sacculated tube containing malignant papilloma, medullary in parts	No second deposit; no free fluid	Meredith	Hubert Roberts, "A second case of Primary Carcinoma of the Fallopian Tube," 'Trans. Obst. Soc.,' vol. 41, 1899, p. 129.
Primary alveolar cancer apparently originating in an accessory tube	Masses in Douglas's pouch and parametrium	?	Friedenheim, "Ueber ein primäres rein alveoläres Carcinom der Tubenwand," 'Berlin Klin. Wochenschr.,' vol. 36, 1899, p. 542.
Innocent papilloma of left tube (Paltauf); fungating mass from right tube (11 months after operation) consisted of malignant papilloma	Uterus free from cancer	Fabricius	Fabricius "Beitrage zur Casuistik der Tubencarcinome," 'Wiener Klin. Wochenschr.,' No 49, 1899, p. 1230.
Right tube full of cancerous papilloma, right ovary normal; left tube appeared free from cancer at second operation, but was strongly adherent to adjacent structures	Peritoneum and uterus found infected at second operation; "adeno-carcinoma"	Id.	Id. ibid.
Malignant papilloma in dilated obstructed tube; traces of "follicular salpingitis due to an old inflammation"	Right ovary "seat of chronic interstitial changes;" not enlarged, infected at point of contact with outer end of tube	Cushier	Mercelis "Primary Carcinoma of the Fallopian Tube," 'New York Med. Journ.,' vol. 72, 1900, p. 45.
Papillomatous alveolar cancer in each tube which was greatly dilated and also contained much bloody fluid (see text)		Witthauer	Witthauer, "Primares Tubencarcinom," 'Monats. f. Geb. u Gyn.,' vol. xii, 1900, p. 615.

No.	Age, married or single	Children; menstruation.	Size of tumour.	Chief symptoms.	Duration of symptoms before operation.	Operation: Result.
34	55 M.	3 children; menopause 4 years	R. and L.	Hypogastric and sacral pains; hæmorrhages; distinct abdominal tumour reached to umbilicus	1 year	Both appendages removed; right ovary cystic; mass from left tube protruded into peritoneal cavity; recovery (?)
35	70 M.	10 children	R.	Hypogastric pains; sanious serous discharge detected during treatment for colpitis granulosa	?	Tube removed with uterus; recovery; 2 years later irregular masses detected in abdomen
36	57	Multipara, menopause delayed to 55	L.	Hypogastric pain; purulent and thin bloody discharge; irregular nearly fixed tumour to left at level of fundus	1 year	Tube removed; adhesion to right omentum; recovery; no after history
37	47 M.	1 child at term, many miscarriages	L.	Dysmenorrhœa; prolapse of vagina; leucorrhœa often streaked with blood; then abdominal swelling; ascites	2 years	Removal of uterus and appendages; recovery; rapid recurrence; frequent tappings; 6 months after operation papillary growths freely exercised; repeated tappings; death 14 mos. after 2nd operation
38	63	4 children	L.	Sanious vaginal discharge and high temperature after typhoid fever; irregular mass size of small orange left fornix	9 months	Tube removed, with uterus and opposite tube; recovery; right ovary healthy; 25 months later cancerous mass dissected off opposite stump of left broad ligament and back of bladder; patient in good health a year later
39	45	4 children menopause at 42	R.	Pain right iliac fossa since menopause; free watery discharge, sometimes bloody, never fœtid; tender body size of small fœtal head in right fornix and Douglas's pouch	3 years	No free fluid; right tube removed; very adherent; burst during extraction; recovery; patient free from recurrence ten months later
40	51 M.	Sterile; period still regular; free	L.	Menorrhag; sausage-shaped tumour Douglas's pouch; operation declined; 2 years 5 months later spherical tumour, size of child's head, movable to *right* of uterus; yellow discharge 3 months before operation	2½ years	Cyst of *right* ovary removed; free from malignant disease; *left* tube appeared to be a large hydrosalpinx; removed; recovery; 8 months later no sign of recurrence
41	48 M.	?	R.	Hæmorrhages; pelvic pain; hypogastric swelling; hard, irregular tumour right fornix, slightly movable; nodule in uterine cavity detected by sound	7 months	Tubes removed with fundus uteri, ovaries saved; septic peritonitis followed; death fourth day.

Character of tumour.	Other parts involved.	Operator.	Reporter and reference.
Both tubes obstructed, dilated, containing malignant papilloma	Cystic tumour, right ovary, surface infected with malignant papilloma	Hofmeier	Arendes, "Ueber primäres Carcinom der Tuben," and Stolz *loc. cit.*
Malignant papilloma in outer half of dilated tube; ovaries atrophied	Limited area of secondary malignant deposit in endometrium	Pawlik	Novy, "Ein Fall von primaren Tubencarcinom," 'Monats. f. Geb. u Gyn.,' vol. xi, part 6; Pawlik, 'Trans. Obst. Soc.,' London, vol. 42, 1900, p. 6.
Tube full of papillomatous cancer			Hannecart. 'Journ. de la Soc. Belge de Chirurg.,' No. 7, 1901, and Stolz *loc. cit.*
Tube stuffed with malignant papilloma, ostium patulous	At second operation peritoneum was found infested with papillomatous growths	Newman (Chicago) first operation; Byron Robinson 2nd operation	Le Count, "The Genesis of Carcinoma of the Fallopian Tube in Hyperplastic Salpingitis," 'Johns Hopkins Hosp. Bulletin,' March, 1901.
Papillomatous cancerous mass filling outer third of tube	Tube adhered to sigmoid flexure (which was torn and repaired at first operation); irremovable deposits on pelvic peritoneum second operation	Howard Kelly	Hurdon, 'Johns Hopkins Hosp. Bulletin,' Oct., 1901.
Large pear-shaped tumour closed at ostium, open at uterine end; containing sanious fluid; masses of malignant papilloma grew from mucosa	At the operation "the uterus and left appendages appeared healthy"; not removed	Boursier & Venot	Boursier and Venot, 'Revue de Gyn. et de Chir. Abdom.,' vol. v 1901, p. 221.
Mass of malignant papilloma size of horse chestnut near the closed ostium of the left tube, which also contained clear serous fluid (see text)		Graefe	Graefe, "Ein Fall von primären Tubencarcinom," 'Centralbl. f. Gynak.,' 1902, p. 1389.
Papillomatous alveolar cancer forming a deeply lobulated mass, size of a large potato, springing from mucosa of middle and outer part of tube	Pedunculated cancerous nodule on endometrium, one centim. below orifice of right tube; rest of endometrium, uterine walls, and left tube normal	Folinea Francesco	Fabozzi, "Diun Cancro primario del Oviduttto," 'Arch. Ital. di Gynec.,' April, 1902, p. 124.

No.	Age, married or single	Children; menstruation.	Size of tumour.	Chief symptoms.	Duration of symptoms before operation.	Operation; Result.
42	50	1 child, menopause 2 years	R. and L.	Abdominal enlargement noted since menopause; bilateral hypogastric tumour	2 years	Both appendages removed; sepsis followed; death third day
43	56	3 children; menopause 5 years	R.	An ovarian cyst developed	?	Ovariotomy; right tube found to be greatly enlarged; recovery; patient in good health 3 years later
44	45	5 children; catamenia regular	R.	Bearing-down pains began suddenly during a violent effort; vaginal prolapse; then mass developed in right fornix and Douglas's pouch; uterus enlarged	8 months	Hysterectomy and removal of both appendages and several enlarged glands in pelvic and lower lumbar region; recovery; in good health 4 mos. after operation
45	57 M.	0 children; menopause 49	L.	Uterine fibroid many years; no menorrhagia; for a few months before operation frequent vaginal hæmorrhages	6 months	Panhysterectomy; fibroid in posterior wall; left tube elongated; recovery; died of recurrence twelve months after operation
46	48 M.	1 child, aged 2 yrs. 0 miscar. period regular till 46; Dysmenorrhœa	L.	2 years abdominal pain and swelling; 6 months amenorrhœa; pale yellow discharge; frequent and difficult micturition; mass continuous with uterus rose out of pelvis	2 years	Ovariotomy; recovery; cyst of left ovary removed with left tube, which was enlarged, and contained a solid mass; right tube and ovary apparently healthy; "no sign of recurrence 2 years and 2 months after the operation"
47	47 M.	2 children; catamenia regular	R.	2 years pelvic inflammation; tense tumour burst into rectum; 5 months sudden lumbar pain; then leucorrhœa; no blood; no menorrhagia; uterus fibroid; fixed, tender, firm mass in Douglas's pouch	2 years	Supravaginal hysterectomy; removal of appendages; recovery; death 3 months later from malignant stricture of rectum
48	50	2 children; menopause 44	L.	Sanious discharge; pelvic pain; firm, tender, sausage-shaped mass behind and to left of uterus, which was enlarged; uterine cancer suspected	6 months	Vaginal hysterectomy; left tube greatly enlarged; recovery; 6 mos. later secondary masses in pelvis and abdomen as high as umbilicus
49	50 M.	0 children; catamenia regular; occasional menorrhagia; phthisis 12 years	R.	Hypogastric swelling and pain; ascites; no sanious discharge; big mass right fornix; smaller left fornix	2 months	Appendages removed: many secondary masses peeled off intestines: recovery; 2 months later recurrence with ascites

Character of tumour.	Other parts involved.	Operator.	Reporter and Reference.
"Carcinoma primarium papillare pseudo alveolare tubal bilateralis"	Metastatic deposits on diaphragm; septic changes only in spleen, liver, heart and kidneys	Dirner	Dirner and Fonyó, "Szülèszet es Nögyogyàszat.' No. 2, 1902, and 'Journ. of Obst. and Gyn. Brit. Emp.,' vol. ii, 1903.
Tube 5¾ inches long, and 2 inches antero-posteriorly; filled with malignant papilloma; ovarian cyst free from cancer		Id.	Id. Ibid.
Tube as big as a foetal head; masses of alveolar papillomatous cancer growing from mucosa	Secondary deposits in right ovary and in glands removed; none in uterus, left ovary and left tube	Stoltz	Stolz, "Zur Kenntniss des primaren Tubencarcinoms," 'Archiv. f. Gynak,' vol. lxvi, 1902, p. 365.
Ampulla of left tube dilated, contained venous blood; a soft mass grew from mucosa, and partly protruded from ostium; it was a pure spheroidal-celled carcinoma	Peritoneum adjacent to ostium, and serous coat of rectum infected; no malignant elements in the uterine fibroid	Bland-Sutton	Bland-Sutton, "On a Case of Primary Cancer of the Fallopian Tube," 'Trans. Obst. Soc.,' vol. xliv, 1902, p. 311, and "A Contributfon to the Surgery of the Uterus," 'Clin. Journal.,' April 20, 1904, p. 4.
A mass of malignant papilloma of the size of a golf ball grew from inner wall of ampulla of left tube	—	Herman	Russell Andrews, "Primary Carcinoma of tbe Fallopian Tube," 'Traus. Obstet. Soc.,' vol xlv., 1903, p. 54. (After History from private correspondence).
Right tube like a large sausage; ostium closed: bright pink masses of malignant papilloma sprung from mucosa	Surface of right ovary infected at one point. Rectal wall probably infected at time of operation	Duret	Danel, "Journal des Sciences médicales de Lille," March 14, 1903, p. 241
Entire mucosa of left tube infested with malignant papilloma; uterus quite free from cancer	—	?	Low, "La Gynécologie," 1903, p. 79
Right tube large and cylindrical-shaped; seat of papillary cancer; *no evidence of old or recent tubercular peritonitis*	Secondary deposit on left tube, left ovary, intestines, omentum and parietal peritoneum	Briggs	Briggs, "Primary Cancer of the Right Fallopian Tube; Right ovary normal," 'Trans. Obstet. Soc.,' vol. xlvi., 1904, p. 60.

No.	Age, married or single	Children; menstruation.	Size of tumour	Chief Symptoms.	Duration of symptoms before operation.	Operation; Result
50	49 M.	—	L.	Uterine fibroid; profuse hæmorrhages; mass in pelvis	—	Hysterectomy and removal of appendages (Sept., 1903); left tube "like a parsnip, with a long thin root" drawn out of pelvis and removed; recovery
51	50 S.	0 (?); menopause not established	R.	Discharge of blood for a few months; hypogastric pain for 3 days before death	"Ill" 4 months	No operation
52	60 M.	Sterile; 50	L.	Abdominal swelling; escape of quantities of yellow fluid from vagina; swelling diminishing; phlebitis of left leg	2 years	Removal of tube; recovery; case lost sight of
53	58	1 child	?	Hypogastric inflammation 30 years before; for 18 years a stationary swelling of abdomen; 1 year hypogastric pain and cystitis; at operation cyst filled pelvis	18 years tumour; acute symptoms 1 year	Well 3 months after operation

* Renaud's case (1847) is apparently genuine (as primary cancer), and if so is the earliest ever *figured*; though no full report accompanied the sketch. See 'Trans. Obstet. Soc.,' vol. xxxviii., p. 322, where the sketch is reproduced.

Gyn. Staff Room University Hospital.

Character of tumour.	Other parts involved.	Operator.	Reporter and Reference.
Dilated and obstructed tube, filled with a soft cancerous mass, which could be traced along tube in its course through uterine wall; endometrium not yet infected	No secondary deposits detected	Bland-Sutton	Bland-Sutton, "A Contribution to the Surgery of the Uterus,," 'Clinical Journal,' April 20, 1904, p. 4.
Mass of medullary cancer in ostium of tube, communicating with a cyst (external to the tube and ovary) as large as an ostrich's egg; cyst seemed to communicate with cavity of tube, which was full of blood	No extension to neighbouring or distant parts	None	W. Essex Wynter, 'Trans. Path. Soc.,' vol. xlii, p. 222; and Doran, in Allbutt and Playfair's 'System of Gynæcology,' 1st ed., p. 821.
Cancerous papilloma in walls of tube; ostium opening into a cyst as large as an adult head; ovary not found	No other parts were found involved	Routier	Routier, 'Bulletins et mémoires de la Soc. de Chirurg. de Paris,' vol. xviii, 1892, p. 73; 'Annales de Gynéc. et d'Obstet.,' vol. xxxix, 1893, p. 39, and private correspondence.
Tubo-ovarian cyst with a primary cancer adjacent to it	Firm adhesion of cyst to adjacent parts; a portion was left behind	Savor	Savor, "Cystitis crouposa bei sauerem Harn," 'Wiener klin. Wochenschrift,' vol. viii., 1895, p. 775.

† Westermark's case is reported in 'Centralbl. f. Gynak.,' vol. xvii., twice (p. 272 and p. 1197), by different writers.

A Case of Lithopædion 41 Years in the Abdominal Cavity.

By F. W. N. Haultain, M.D., F.R.C.P.

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Samples of true lithopædia are of such infrequent occurrence that the following case, which came under my observation through the kindness of Dr. Stone, Montrose, is worthy of recording:—

Patient, age 71, when 30 years of age became pregnant, and when at supposed full time, in January, 1868, went into labour without tangible result. The abdominal swelling remained, and for some years gradually diminished in size. On February, 1904, she died somewhat suddenly of cardiac disease. On *post-mortem* examination the abdominal tumour was found to be due to a calcified fœtus placed behind the uterus, and densely adherent to the intestines and its surroundings. The fœtus was disposed head downwards, and was intimately adherent to surrounding parts, so that no true relations could be differentiated. There was no appearance of an enveloping sac. The uterus was atrophied and adherent to the front of the fœtus. The patient was well aware of the presence of the child, and frequently commented on it. Beyond occasional bouts of inflammatory abdominal symptoms she enjoyed good health, and performed her duties till shortly before death. Menstruation returned a few months after her spurious labour and continued regular till the age of 45. There were no subsequent pregnancies.

The fœtus, as shown in the accompanying photograph, preserved in a marked degree its normal configuration. The attitude of flexion was undisturbed; the limbs, to the finest digits, were in absolute preservation, and the nails projected over the finger tips. The tissues were contracted and calcareous on the limbs, but on the back scalp and breech they seemed of normal thickness.

Many similar cases have been recorded, and, so far, I have been able to unearth nine records of cases where the fœtus was carried over 40 years. They are as follows:—

Date.	Author.	Years retained.	Age of Patient at death.	Bibliography
1720	Leinzell	46	91	—
1767	Nebel	54	91	(1)
1790	Cheston	52	77	(2)
1819	Seiler	46	80	(3)

Lithopædion.

1820	...	Bruns	...	50	...	?	...	(4)
1825	...	Cruveillhier	...	42	...	77	...	(5)
1828	...	Heiskell	...	40	...	?	...	(6)
1876	...	Chiari	...	49	...	82	...	(7)
1880	...	Kuchenmeister	...	57	...	87	...	(8)

Many others of less than that period are described. In several the fœtus has been shown to be contained in the sac of membranes, which was also calcareous, but in most it was found in the peritoneal cavity attached to the surrounding organs without an intervening sac. In most of the cases described menstruation returned regularly, and in Cruveilhier's case two subsequent children were born.

In the majority of cases of advanced ectopic pregnancy decomposition results with subsequent disintegration and passage of the fœtal members through the hollow viscera; and it is difficult to discover the reasons which in the one case tends towards calcification, and in the other to disintegration. Prolonged retention of the fœtus in a normal uterus with resulting lithopædion has, as far as I can find, not yet been conclusively proved; but a case of Pearson's* would appear to be an example of lithopædion retained 26 years in a rudimentary horn of a double uterus.

Bibliography.

1 *Nebel Histor. et Com. Elector. Theodore Palatinae*, 1770. Vol. ii., p. 403.

2 *London Medico-Chir. Trans.* Vol. v., p. 104.

3 *Zeits. für Natur, and Heilkunde*, 1819. Vol. ii., p. 189.

4 *Med. and Physic. Journ.*, May, 1820.

5 *Schmidt's Jahrbuch*, 1838. Vol. xx., p. 366.

6 *American Recorder*, 1828. Vol. xliii.

7 *Wiener Med. Presse*, 1876. Vol. xvii., 1092.

8 *Archiv für Gynäkol.*, 1881. Vol. dcccxvii., p. 168.

* Ed. *Med. and Surg. Jour.*, 1806.

Enlargement of the Spleen Simulating a Pelvic Growth: Splenectomy.

By A. J. Sturmer, Lieutenant-Colonel I.M.S.; *Superintendent Government Maternity Hospital*, Madras.

In most works on gynæcology, enlargement of the spleen is mentioned as one of the diseases to be differentiated from an enlargement of the ovary, but up to the present time I never had any difficulty in diagnosing an enlargement of the spleen, and I must have seen hundreds of cases—for India is the land of the enlarged spleen. This is a most unusual case of splenomegaly, and it seems worthy of record, if only to put others on their guard, and to prevent them from mistaking an enlarged spleen for some growth rising out of the pelvis. In most cases of splenomegaly there is a history of more or less continued fever extending over a long period, and there is generally a very marked cachexia attending on such cases. Major Simpson, I.M.S., who admitted the case during my absence on leave, could not make up his mind as to the diagnosis. When I first felt the tumour I said it was an enlarged spleen, but I was led to alter my opinion by the peculiar characteristics of the swelling, and the general good condition of the patient. I have felt before now the lower end of the spleen through the vagina, but in these cases I have always been able to trace the growth to its origin under the ribs, and there has usually been a well-marked history of fever, or cachexia has been present, and the "notch" has always helped to make the diagnosis clear. In this case all these guides were absent.

Elsie, æt. 25, ii-para, native Christian, married 10 years, last child born November, 1902. Admitted to the Government Maternity Hospital on June 30, complaining of a painless swelling filling the abdomen which has existed for the past 16 months. Menstruation commenced at the age of 11 years, regular, lasting five days, and painless. Last period two years and four months ago. Micturition normal. States she has been getting thinner lately. Had fever on and off for about a year before marriage, and has had it occasionally since. She lives at Chudderghaut—Secunderabad,—and malarial fever is very prevalent there.

Present state. She is a well-nourished young woman, not anæmic, tongue clean but indented. Bowels regular. Pulse 108. Temperature normal.

Abdomen. Considerable enlargement; a large irregular tumour is found occupying the right iliac and lumbar regions and encroaching on the left side, extending from the pubes to three fingers-breadth below the ribs. It fills more of the right side of the abdomen than the left. The umbilicus is flattened out. The tumour is hard, smooth, freely movable, especially towards the right side. A hard ridge is felt in the neighbourhood of the left rectus muscle, but the ridge evidently belongs to the tumour and is not the muscle thrown up. On deep pressure in both flanks an indistinct fluid thrill is felt, but whether due to free fluid in the peritoneal cavity or in the tumour could not be made out. There is dulness all over the tumour, but the flanks are tympanitic. The hand *can easily be passed under the ribs over the top of the tumour*, and can be made to dip underneath it, therefore it presumably does not grow from above.

The following measurements of the abdomen were taken:—

Girth at umbilicus	33¾ in.
Girth at ensiform cartilage	27 „
From umbilicus to pubes...	8½ „
From umbilicus to R.A.S.S.	8½ „
From umbilicus to L.A.S.S.	7½ „

P.V. The uterus is small, os almost at the outlet: Douglas's pouch is filled with a tumour which seems continuous with the uterus. In front the anterior vaginal wall is bulged down by a growth which seems to be a part of the tumour in the abdomen. The sound goes backward for 2½ inches.

As I was uncertain as to its nature, I determined to explore, and for this purpose made a small incision over the right rectus on the 6th July. On opening the peritoneal cavity some fluid came away, the abdominal wall was devoid of all muscle, and a bluish-red mass presented, which was evidently not cystic and was not uterine. On passing my hand into the right iliac fossa I came on the splenic notch, resting on the right ilium. Above, the spleen did not pass under the ribs; the incision was therefore enlarged, and after a little manœuvring the spleen was delivered. The pedicle was long. The splenic artery, which was about the size of a goose quill, divided into two branches before entering the spleen, and these two branches were first tied, and then the main vessel ligatured. The vein was of enormous size, and like the artery divided into two branches, which were tied separately; a pedicle needle was then passed between the pancreas and the vein, and the vessel and a portion of the pancreas

tied in an interlacing double-loop ligature. The spleen was then cut away. No blood was lost during the operation, which was a very simple one. The appendix was found to contain a round worm—not an uncommon experience; it was cut across, and the outer portion with the worm removed; the cavity of the appendix also contained some fecal matter. The liver was much enlarged, but as the spleen lay over it, it was not discovered until that organ had been removed. As a considerable quantity of blood was removed with the spleen, a pint of salt solution was injected under the right breast during the operation, and a litre of the same injected into the rectum at the close of the operation. The external wound was closed in three layers. The spleen weighed 4 lbs. 3 oz., and was remarkable for the number of notches—three or four deep cuts at its edge,—near the usual notch.

On the afternoon of the day of operation she complained of feeling chilly and the temperature rose to 103°4; she was ordered quinine, and the blood was examined but no parasites of any kind were found. She continued to have rises of temperature up to the 6th August, when the temperature fell to normal and remained so until she was discharged on the 27th August. She was given quinine, arsenic, and iron. The fever did not apparently affect her, for her appetite remained good, and she did not look the worse for the almost constant rise. She suffered from a few boils which may have helped to keep up the temperature. On her leaving the hospital the liver could not be felt. She was strong and able to walk about and was to all intents in good health, and had gained considerably in weight.

CRITICAL REVIEW.

Rapid Mechanical Dilatation of the Cervix in Obstetrics.

By W. E. Fothergill, M.A., B.Sc., M.D., Manchester.

To trace back to its origin the use of mechanical dilators in obstetric practice would be a vain task. It would seem that at most periods there has been a prejudice against the use of these instruments, and very little has been written about the earlier attempts to introduce them. Scanzoni, for example, writing about 1853, dismissed the efforts of Osiander, Carus and Busch in a few lines of general and complete condemnation, and subsequent writers have followed his example in omitting serious discussion of the subject. The five fingers of the human hand were indeed the only mechanical dilators approved in obstetric circles until the use of hydrostatic dilators,—first elastic and then non-elastic,—gradually became general. With the growth of gynæcological surgery, two or three-pronged metallic instruments, like those of Sims and Ellinger, came into fairly general use for dilating the non-pregnant cervix. In midwifery, however, instruments of this type attracted but little attention until Bossi described his original three-pronged dilator in the year 1890. In the same year Tarnier introduced his *écarteur;* this was a uterine stimulator rather than an actual dilator, and has been but little used. Cases illustrating the use of Bossi's method, however, soon began to appear in the Italian and French journals. Sangregario published cases of placenta prævia in 1893; Ferri also used the method in this complication. De Paoli published 50 cases and Bossi 112 in 1896. Beck's paper appeared in 1897. Although Bossi made a communication at the Berlin Congress in 1890, his instrument attracted little or no attention outside Italy and France until Leopold visited Genoa in 1901 and saw Bossi operate with his improved four-pronged model. Leopold soon published twelve cases, lauded the instrument highly, and expressed the hope that it might soon have a place in the midwifery bag of every medical practitioner. He endorsed the five well-known claims made for the instrument—(1) it can be used even when the cervix is closed and as yet unshortened; (2) the operator is sure of obtaining sufficient dilatation to allow of the delivery of a living child; (3) this can be secured, if necessary, in a

short time—15 to 20 minutes; (4) the use of the instrument excites uterine action even in cases of inertia; (5) dilatation up to 11cm. ($4\frac{1}{3}$ inches) can be secured without unduly distending the vagina.

Leopold's papers were rapidly followed by reports of cases of eclampsia and other complications in which Bossi's method had been used. The writers for the most part were favourably impressed. Various failures and accidents were recorded, but these were generally explained away as due to inexperience, or to faults in the construction of the instrument which could easily be remedied. Thus Knapp described a large tear which appeared in the cervix in spite of slow and careful dilatation; but the patient had only reached the beginning of the eighth month, so the case teaches the lesson that the earlier the date the greater the risk of tearing. Bischoff had two tears extending into the parametrium; but he used the three-pronged instrument subsequently discarded by Bossi. Frommer introduced his eight-pronged dilator with the object of avoiding accidents due to this cause. And so on. Lederer's paper is a fair example of these reports. He describes ten cases from Prague. There were five eclamptics, one of whom died. Other indications were phthisis and uterine inertia. The instrument was also used for the induction of premature labour. Dilatation does not appear to have been carried far enough in these cases, or else too much time for contraction was allowed to elapse between stopping dilatation and accomplishing delivery, for four of the children had to be perforated, and one was born dead, while three were still-born and died after temporary resuscitation. Only two arrived "lebensfrisch" in the world. Still Lederer was favourably impressed with the possibilities of the instrument, and claimed for it three advantages over the various hydrostatic dilators in use—(1) it could be used with closed and unshortened cervix; (2) asepsis could be ensured; (3) rapidity of action. He doubted whether the tears found in the cervix were worse than those often seen after spontaneous labour, or after turning and forceps extractions through an incompletely dilated os. More favourable results were secured by Keller, who reported 15 cases from Gusserow's clinic, in Berlin. He pointed out the great difference between cases in which the cervix was partially dilated and those in which it was not taken up at all at the beginning of the operation. In the latter cases dilatation occupied twice as long, on an average, as in the former. The instrument, he agreed with Bossi, had a dynamic action, that is, its use set up uterine contractions. This is a point of importance in the subsequent discussion. Keller did not echo Leopold's wish to see a "Bossi" in

the bag of every practitioner. He thought it should only be used by those practitioners specially experienced in obstetric work, as in the hands of a beginner it might be dangerous. He considered the invention to be an important advance, especially in the treatment of eclampsia. His own fifteen cases included nine of this nature, with two deaths.

Records of more or less successful cases, with the operators' personal impressions, were beginning to be wearisome to the reader, when in 1903 Dührssen enlivened the subject with an article entitled "Is Bossi's method really to be regarded as an advance in operative midwifery?"—a question which he answered with an emphatic negative. Dührssen had known the method since 1890, but had never tried it himself. He collected from the literature of the subject all the unfortunate occurrences on record—a striking list—and concluded (1) that the instrument did not always enable the operator to secure enough dilatation for the delivery of a living child; (2) that the operator was not able to control the process; and (3) that the method was positively dangerous, some of the tears produced being followed by bleeding, and some becoming infected. The favourable results secured by Leopold and others, Dührssen thought, could have been obtained either by hydrostatic dilators or by multiple incisions of the cervix, while the less favourable cases could have been treated better by incisions or by vaginal Cæsarean section.

This onslaught provoked a vigorous reply from Bossi, who stigmatised Dührssen as illogical and unscientific in presuming to criticise a method he had never tried. His consideration of the reports at second-hand had led him to conclusions opposed to those reached by the operators themselves, who had had the advantage of personally observing clinical, anatomical and physiological details which a mere report could not give. He left Leopold and the other writers to defend their own statements, stating that for himself and his assistants at least there had been no difficulty in securing adequate dilatation; that by keeping a finger on the cervix control of the operation had always been satisfactory; that tearing and hæmorrhage had been very rare; and that infection was more easily prevented with his than with other methods. Bossi continued that it was curious that Dührssen should recommend as an alternative for mechanical dilatation the method of multiple incisions, seeing that cuts bled more freely than tears. Unlike his critic, Bossi had given the method of incision a full personal trial, and had found that the cuts, besides causing hæmorrhage, were often extended by tearing

during the extraction of the fœtus. Such tears often involved the body of the uterus and were alone sufficient to bring about fatal results. Indeed, incision of the cervix could only be justified so long as there was no other method which answered the following demands:—(*a*) Certain and sufficient dilatation to allow of the delivery of a living child; (*b*) rapidity in securing this degree of dilatation—10 minutes and upwards; (*c*) power of exciting uterine action accompanying dilatation. These three demands were not supplied by hydrostatic dilators, but were met by Bossi's own method, which, in addition, could easily be carried out by any practitioner even when alone. It rendered no sutures necessary and gave the operator complete control of the situation. Thus, said Bossi, cervical incisions and, even more so, vaginal Cæsarean section remained merely as historic remembrances; the time for their use was past and gone.

Dührssen retorted that it was a falsehood to state that dilatation could always be secured sufficient for the saving of mother and child, for in a number of cases the children were dead and the mothers had been seriously injured. Bardeleben and Gauss had each demonstrated two serious tears. Wirtz had failed once in placenta prævia and twice in eclampsia. One of his cases had had to be completed by Cæsarean section, and in another the mother had died after $1\frac{1}{4}$ hours of fruitless dilatation. Uhle had lost a child while delivering with forceps after tearing the cervix. Ostreil had had a tear in his first case, one in his second and two in his fourth, and had written that one could seldom avoid seriously lacerating the cervix when using Bossi's dilator.

It is clear that Dührssen secured considerable *éclat* in this exchange of opinions by taking advantage of Bossi's habit of expressing his statements in the form known to logicians as the "universal affirmative," a form which can be given the lie by producing a single exception. Apart from this, Bossi would have divided the honours of debate fairly evenly with his opponent.

Von Bardeleben subsequently attacked the question with a professedly open mind, began his paper with a long discussion on natural and artificial dilatations of the cervix in general, and criticised Bossi's method only after testing it himself in ten cases. This writer holds that there are two factors at work in natural dilatation, namely, the outward pull of the contracting uterine muscle and the outward push of the bag of waters or the presenting part. The outward pull can dilate in some degree without any push from the presenting part (as in transverse labours, contracted pelvis, etc.). But there can be no push of the presenting part unless the

uterus is in action. Thus the first factor (the pull) can work alone, but the second (the push) cannot work in nature unless the first be also present. The second factor or push can, of course, be imitated artificially in the absence of the first, namely, uterine action. This can be done by the fingers, by elastic bags, by non-elastic bags (with traction on the stalk), or by the diverging blades of instruments of the Bossi type. In artificial dilatation the object should be to imitate as nearly as possible the physiological process; that is, in pushing apart the sides of the cervical canal a method should be chosen which will also encourage the uterus to contract and pull the cervix open at the same time.

After experimenting in ten cases, Bardeleben concluded that the value of the metallic dilator as a stimulant to uterine action is very small, much inferior, indeed, to that of the non-elastic bags of Champetier de Ribes and others.

In this matter of observation von Bardeleben directly contradicts Bossi and Leopold, who claim, as one of the main features of metallic dilators, that they cause uterine action, even in cases of inertia, at the will of the operator. The point cannot be regarded as settled, but Bardeleben concludes from it that metallic dilators, since they do not possess the "dynamic" action claimed for them are in any case either unnecessary or undesirable. When a cervix can be dilated it should be dilated by the means most closely resembling the natural process, namely by inelastic bags. When a cervix cannot be dilated it should be cut *à la* Dührssen, rather than torn open by Bossi's dilator.

Von Bardeleben has recently followed up his first condemnation of metallic dilators by a paper "on the remote results of labours aided by rapid dilatation with mechanical dilators." He discusses once more the dangers of these instruments, and passes on to consider tears of the cervix, their frequency and results, quite apart from their causation. After 20 pages of this nature, he approaches the subject of his paper by narrating the after history of the ten women he delivered by Bossi's method, as described in his previous contribution to the subject. Four of them are excluded from consideration as one of these was dilated to 4½cm. only, for placenta prævia, and three died (of phthisis, heart disease, and eclampsia respectively). *Autopsies* revealed tears of the cervix in two of these. The six women who survived were examined for "remote results" on an average five months after confinement, and their condition is briefly described. All were uni-paræ, and five appear to have been more or less injured during delivery. This paper of 36 pages defies

abstraction. The author finally repeats his opinion that the non-elastic bag is better than the metallic dilator because its use readily allows the operator to recognise an undilatable cervix, and because, after dilatation by bags, the cervix does not contract again so rapidly as after the use of metallic dilators. A cervix either will dilate or will not dilate. If it will dilate non-elastic bags are preferable for the above reasons; if it will not dilate, it is better to cut it than to tear it. Therefore metallic dilators are either unnecessary or undesirable. The author hopes that the publication of the sad experiences of his patients may check the present *furor dilatationis* (universaldilatationsfähigkeit) before still more women are thereby plunged into helplessness and suffering.

In spite of the efforts of Dührssen and Bardeleben, many reliable authorities continue to find dilators of the Bossi type useful and apparently harmless when carefully used in suitable cases.

Thus Gairdner (*Journ. of Obstet. and Gynæcol. Brit. Emp.*, Vol. iv., No. 4, p. 384) reported in October, 1903, fourteen cases in which Bossi's and Frommer's instruments were used in the Glasgow Maternity Hospital. He regards the results as quite satisfactory, and makes some useful comments.

Schurmann's important paper was abstracted (*Ibid.*, Vol. iv., No. 6, p. 566) in December, 1903. He describes ten cases dilated without evil result in Orthmann's Clinic, with Preiss' instrument. This writer goes so far as to say that mechanical dilatation will do away with cervical incisions and the vaginal Cæsarean operation.

Ballantyne, writing in February, 1904 (*Ibid.*, Vol. v., No. 2, p. 136), mentions that Professor Simpson began using Bossi's dilator in the Edinburgh Maternity Hospital on November 3rd, 1902, and reported its satisfactory action to the Edinburgh Obstetrical Society on November 8th. Eight cases are fully recorded in this paper, which should be studied carefully by British readers who contemplate using the instrument. It has, in Ballantyne's opinion, sufficient merit to counterbalance its risks and to allow a margin for inevitable accidents. "It is an instrument to be worked with the head rather than with the hand." "It is an exceptional remedy for exceptional conditions."

On December 10th, 1903, Dr. H. Macnaughton-Jones (*Ibid.*, Vol. v., No. 1, p. 90) showed to the British Gynæcological Society a modification of Bossi's dilator, which he (in 1901) was the first to use in this country. He said that he had frequently and successfully used the instrument, and he believed that the lacerations which had followed its use in some hands were avoidable.

At the' Glasgow Obstetrical Society on November 25th, 1903, Dr. Jardine showed various instruments, and recommended Frommer's (*Ibid.*, Vol. v., No. 1, p. 95). If it was carefully used there was very little tearing of the cervix. Dr. Munro Kerr said that when the cervix was obliterated and the os would admit the dilator easily, dilatation would be completed safely in about 25 minutes. If the cervix is not obliterated dilatation can be safely secured if care, time and patience are expended. In these cases, however, there is decided risk of severe laceration.

The use of metallic dilators at Helsingfors has recently been reported. Hahl records eleven successful cases. He considers placenta prævia a contra-indication, and prefers forceps to turning after the use of the dilator, in order to avoid gripping of the aftercoming head by the rapidly contracting cervix. This paper was abstracted in this journal in July, 1904 (Vol. vi., No. 1); also one by Heikel describing the use of Tarnier's *écarteur* in Helsingfors. This instrument was used in 40 cases without conspicuous success. It does not compete with Bossi's type, but rather with gradual hydrostatic dilators, to which it is in some ways superior.

Instruments.

It is not necessary at this date to describe the construction of mechanical dilators, as these are figured in the advertisement pages of most medical journals. It may be noted that Bossi's original pattern had three blades, while his new model has four, which when closed equal a No. 11 Hegar's dilator in thickness. Frommer's model has eight blades, which when closed are as thick as a 13 Hegar. Kaiser's instrument also has eight blades. Schurmann and others complain that there is not room for a finger on the cervix when the blades are so numerous. Raineri devised a five-branched instrument. The model of Preiss is favoured by some as light, handy and cheap. Nowakowski applied a cover like an expanding napkin ring to protect the cervix from the prongs of the dilator, but this is condemned, as, though it spreads the pressure over the whole surface pressed on, it renders examination during dilatation impossible. Macnaughton Jones has constructed a light and handy instrument. De Seigneux, of Geneva, has devised a new dilator quite different from all of these. It was described some months ago, but only last month a paper based on the author's communication to the Geneva Medical Association appeared in this journal (Vol. vi., No. 2, p. 191).

De Seigneux holds that all previous instruments are (1) without

true pelvic curves; (2) that they are too heavy and too complicated; and (3) that the dilating surface of the blades is too small. The plane in which the points of the blades move must be parallel with the plane of the inlet of the true pelvis if the blades are to act evenly and truly upon the cervix, whose axis is approximately perpendicular to the plane of the brim. In all instruments of the Bossi type it is impossible to bring the prongs really into the pelvic axis. To this fact is due the bulk of the tears which occur, says this author. His main object was to construct a dilator with a true pelvic curve, and this has been done in a way which the author's figure shows at a glance to be much neater and more "mechanical," as a workman would say, than the devices used in instruments of the Bossi type. All who contemplate buying dilators should carefully study de Seigneux's paper. Injuries have been described by a large number of writers as being caused by the ends of the prongs of dilators digging or boring into the cervical tissue posteriorly (Gairdner—Schurmann). The cause of these injuries is obviously, as pointed out by de Seigneux, the absence of a true pelvic curve in all instruments of the Bossi type.

Manipulation.

Some authorities use metallic dilators without the aid of anæsthetics, the majority prefer to have the patient anæsthetised to the surgical extent, both for the relief of pain and for the relaxation of the muscles. Rissmann and others use a speculum for introducing the instrument; most writers consider this quite unnecessary. Schurmann and a few other writers advise the use of a vulsellum, but others give a warning against this, as liable to so elongate the cervix that the prongs do not pass completely through it. The difficulties met with in inserting the instrument are obviously due to the absence of a true pelvic curve in all instruments of the Bossi type. De Seigneux claims, probably with truth, that his own invention will do away with all these, as with the risk of boring and digging injuries of the cervical wall. All advise gradual dilatation, as slow as is compatible with the safety of mother and child. Gairdner allows three minutes for each centimetre of dilatation, the eye being on the clock throughout the process. Dilatation should be slower and slower as it progresses; tearing becomes more and more likely as the process nears completion. All advise frequent if not constant examination of the cervix during dilatation by a palpating finger passed between two prongs. Keller suggests that an assistant should support the weight of the instrument and hold it

in situ, the operator turning the screw with one hand while examining with the other. Thus the delicacy of his muscular sense is not impaired by the extra muscular effort of holding the instrument. It is worthy of notice that the average time recorded as occupied in dilating the cervix seems to be growing longer and longer as experience is accumulated. It is agreed that dilatation should be carried farther than the degree absolutely necessary, because the rapidly dilated cervix contracts very quickly. Many of the injuries recorded have been caused and many children lost during the extraction of the fœtus through a quickly contracting cervix. The more rapid the dilatation the more rapid is the subsequent contraction. Hahl notes the desirability of delivering with forceps rather than by turning. This, of course, is merely a special application of the general custom of sound obstetricians, who always avoid head last delivery through an imperfectly dilated cervix. The breaking of the waters during dilatation would appear from the records to be a common and unavoidable occurrence. The presenting part may be driven between the prongs, and then a difficulty occurs. For the instrument cannot be withdrawn unclosed without injuring the mother, and it cannot be closed without injuring the child. De Seigneux avoids all trouble in withdrawing the instrument, for, after removing the handle, his blades can be withdrawn one by one. Before using any instrument the purchaser should verify the markings on the scale by comparing them with the space between the prongs as directly measured with a tape measure or rule. It should be remembered when checking the scale that there is a considerable difference in area between a four-inch square and a circle with a diameter of four inches. Some writers advise covering the prongs with pieces of rubber drainage tube as an additional safeguard for the cervix.

Indications.

According to Dührssen and Bardeleben there are no indications for the use of metallic dilators. Leopold, on the other hand, lays down the following:—

1. Induction of premature labour and the acceleration of labour induced by other means.

2. *Accouchement forcé*, including eclampsia, heart disease, phthisis and other disease, putrefying fœtus, threatened death of the fœtus, placenta prævia, anatomical stenosis of the cervix, cicatricial stenosis of the cervix.

3. Retained placenta with contracted cervix.

Between these extremes there are various intermediate opinions. As to the induction of premature labour, the instrument has been used for this purpose by Lederer and others; but up to the present time there is no indication that it will ever be much used for strictly inducing labour, as opposed to accelerating labour induced by other means.

Eclampsia, it is safe to say, has so far been far the most frequent indication for mechanical dilatation. About placenta prævia there is a pronounced difference of opinion. In many of the early cases recorded this was the indication (Sangregario—Ferri). Bardeleben, Wirtz, Hahl and others regard it as a distinct contra-indication; their grounds for this attitude are, however, empirical and personal rather than logical. Anatomical and cicatricial stenosis are the conditions in which, above all others, Dührssen's views are shared by other writers, and in which Bossi's dilator is seen at its worst. As to the retention of the placenta by contraction upon it of a portion of the uterus, those who hold that the contracting portion is the retraction ring and not the cervix will hardly approve of the introduction of a pronged instrument for the dilatation of that structure.

The majority of writers do not appear to attach much importance to the cause or reason which makes artificial dilatation desirable. Given that Bossi's instrument is admissible in any case at all, the points to consider before using it appear to be the state of the cervix and the state of the patient rather than the nature of the reason which makes dilatation desirable. The operator will only have to choose between dilatation and the use of multiple incisions in those cases in which rapidity is the main object. He will first consider the state of the patient. If delivery within a few minutes is demanded in the interest of mother or child, the next point to consider is the state of the cervix. Here the state of the tissues is the guide rather than the size of the os. If the operator judges the cervix to be softened enough to admit of complete dilatation within a few minutes he will dilate, otherwise he will incise. Neither fingers nor bags will compete with metallic dilators when extreme rapidity is required. In cases where there is less hurry there is more room for choice. It must be remembered, however, that it is perfectly easy to tear the cervix and to infect the uterus either with the fingers or with bags. Further, on account of the perishable nature of "rubber goods," very few practitioners keep hydrostatic dilators in a state ready for use. Again, dilating with the fingers is a most painful and tiring process for the operator, and fingers

cannot be sterilised so easily as metal, if at all. It would thus appear that in the fairly common cases in which some assistance in the first stage of labour would be desirable could it be given safely and easily, there will be a field for the use of metallic dilators. This, at least, is the opinion of several authorities. That it is also the opinion of a number of practitioners is shown by the fact that one single provincial instrument maker and surgeon's sundryman has sold two dozen Bossi's dilators during the last few months.

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REVIEW OF CURRENT LITERATURE.

GYNÆCOLOGY.

Condition of the Endometrium in Gonorrhœal Vulvo-vaginitis of Children.

JUNG (P.). *Zentral. für Gynäkol*, 1904. No. 33.

THE question whether and how often in the above disease the endometrium becomes infected is still in dispute.

Dind (Societé Vaudoise de Médecine, June 4, 1904), asserted that endometrial infection can be proved by direct investigation. In 1901 Jung recorded four cases, in three of which he proved the presence of gonococci in the endometrium microscopically, whilst in the fourth there was purulent cervicitis but no gonococci were found. In his second communication seven cases were recorded, and in one of these only was the diplococcus of Neisser found in the cervical secretion. Since the above publications the writer has noted three more publications on the subject by Dind, Buschke, and Lebedeff.

Dind states that the seats of election for gonococci are the cervix and urethra. Pus can be seen exuding from the external os. In the "florid stage" this pus contains the diplococcus, later on it disappears or is seldom present. That the endometrium of the body becomes infected is proved in some of these cases by the supervention of peritonitis. It is probable that the large size of the cervix compared with the body of the uterus in the young is an important factor in determining the latter as the more frequent seat of the lesion. Lebedeff collected 56 cases from Dind's clinic; 29 of these showed the presence of gonorrhœa of the cervical mucous membrane, but here diagnosis rested on clinical evidence alone. Again gonorrhœal cervicitis has been proved to exist when the vaginal secretion contained no specific organism. Buschke recorded 50 cases in which there were various serious and trivial complications. In four there was rectal gonorrhœa, in one conjunctivitis blenorrhagica, severe cystitis and bartholinitis. In one child there was intense tenderness of the abdomen, the patient being very ill and confined in bed for many weeks. In another case, as the hymen was torn, the cervix could be easily examined by speculum, and was found to have escaped infection entirely.

The results of the above investigations being contradictory Jung

started a fresh investigation. Nine children between the ages of 2 and 9 years were examined; the shortest observation extended over three weeks, the longest four months. Each child was examined for gonococcal cervical secretion every eight days. Gonococci were present, on admission, in the vagina and urethra of all cases. No complications followed in any instance, and in forty cases admitted into the clinic at Bern no adnexal or peritoneal trouble ensued. This clinical fact—the infrequency of peritonitis, speaks similarly for the infrequency of corporeal endometritis in children. The injection of the usual antiseptics by means of a narrow cannula never led to any complications as was the case with Bumm's employment of silver solution (Deutsche Klinik, 1902, bd. xi., 416), where acute pelvic-peritonitis was set up after this treatment. With regard to the technique of illuminating the cervix Jung finds it is never necessary to give an anæsthetic or tear the hymen even in children two years of age. He uses Rose's female urethral speculum and a forehead mirror with an electric lamp placed over the child's abdomen. Having due regard to the possible sources of error Jung found that the infection of the cervical mucous membrane by the gonococcus undoubtedly occured, but that it was a very rare complication of vulvo-vaginitis in childhood—twice in twenty cases—whilst peritonitis as a sequela was still more unusual.

CUTHBERT LOCKYER.

The Relation between Carcinoma Cervicis Uteri and the Bladder and its significance in the more radical operations for that Disease.

SAMPSON (JOHN A.). *Bulletin of the Johns Hopkins Hospital*, May, 1904. Vol. xv., No. 158.

IN 157 hysterectomies for carcinoma cervicis uteri at the Johns Hopkins Hospital the bladder was injured in 19 cases, or 12·1 per cent., whilst in a large number of cases cystitis followed the operation. The object of this paper is to see what may be learned from anatomical, experimental and clinical studies as to the indications for, and feasibility of, sacrificing portions of the bladder in these more radical operations. The paper contains an account of the experimental work performed on 26 dogs to demonstrate some of the etiological factors in the causation of cystitis, and it is illustrated with 15 drawings. As a result of his investigations the author arrives at the following conclusions:—

1. The cervix rests against the bladder posterior to the trigonum,

and under normal conditions the two organs are but loosely attached to each other so that their separation is easily accomplished. The size of this vesical area varies in different cases, and also with the position of the uterus in the pelvis and degree of distension of the bladder.

2. The growth in its anterior extension soon reaches the bladder, as manifested by the vesico-vaginal fistulæ resulting from the necrosis of the growth which has involved the bladder, and by accidental openings made in the bladder in freeing that organ from the cervix during hysterectomy.

3. Freeing the uterus, parametrium and upper part of the vagina from the bladder exposes a large area of bladder wall extending from above at the utero-vesical peritoneal fold, to a point below which varies with the amount of vagina removed, but usually exposes a portion of or the entire trigonum. This area laterally extends beyond the entrance of the ureters into the bladder, if the ureters are resected or dissected free. There is no advantage to be gained in the removal of a large portion of the vagina unless it is involved by the growth and the more vagina removed the greater the injury to the bladder. On the other hand, the wide excision of the tissue surrounding the upper portion of the vagina is most important.

4. In freeing the bladder it is injured, the amount of injury varying with the difficulty experienced in freeing it, which in turn is dependent on whether the bladder is adherent or not.

5. The blood supply of the bladder may be impaired by the ligation of large vessels from which vesical arteries may arise, and also in freeing this large bladder area all vessels going to this area are destroyed, and in addition vessels in the bladder wall may be injured.

6. Nerves and ganglia are removed or destroyed in these injuries, as shown by the retention of urine or an inability to empty the bladder completely, which is apt to follow these operations.

7. Injuries resulting from the operation together with impairment of function following them, lessen the resistance of the organ, so that it is usually unable to resist infectious organisms which may gain access to the bladder, and cystitis results. In addition to the avenues available for the entrance of organisms into the bladder a new one now presents itself, that is, the injured bladder wall.

8. Cystitis occurred in 12 out of 16 of those cases where the author followed the bladder condition after operation, and in two of these cases it resulted in renal infection and death. In three of the four cases in which cystitis apparently did not occur an

accidental vesico-vaginal fistula was present which apparently prevented a cystitis, for cultures taken from two of these cases showed colon bacilli in large numbers.

9. The best surgical treatment for infection in any part of the body is incision and free drainage, together with rest for the part diseased, and apparently this is what a vesico-vaginal fistula does for these cases.

10. It seems best that after these operations the bladder should be catheterised every three or four hours, followed by a bladder irrigation as a prophylactic means of preventing retention of urine, and avoiding or lessening the severity of the cystitis, and should a severe cystitis develop as determined by cystoscopic examinations, a vesico-vaginal fistula should be made, which may be done without even a local anæsthetic, and if it does not close spontaneously it may also be closed without an anæsthetic, as is described in this article.

11. The excision of portions of the bladder adherent to the growth improves the chances of a cure, and the presence of a vesico-vaginal fistula apparently lessens the chance of a post-operative cystitis and the danger of an ascending renal infection.

COMYNS BERKELEY.

The Relation between Carcinoma Cervicis Uteri and the Rectum and its significance in the more Radical Operations for that Disease.

SAMPSON (JOHN A.). *Bulletin of the Johns Hopkins Hospital*, June, 1904. Vol. XV., No. 159.

UP to October, 1902, over three-fifths of the patients admitted to the Johns Hopkins Hospital for malignant disease of the uterus were beyond operative treatment. Of 143 patients on which hysterectomy had been done 21 died as a result of the operation, giving a primary mortality of 14·6 per cent. Of 69 cases which had been followed, three years after the operation, 20 were living, but later six of these had recurrences, giving a percentage of recurrences after three years and more of 78·2 per cent. On considering those cases in which five years or longer had elapsed since the operation, it was found that 49 could be traced. Of these the growth had returned in 43, or 87·7 per cent. Two of the patients died at the end of six and seven years respectively from general recurrence.

The cases admitted for carcinoma were again reviewed in May,

1904, and it was found that after three years or more the growth had returned in 76·5 per cent. of 94 cases, and that after five years or more the percentage of recurrence was 79·1 per cent. in 67 cases heard from, and the author explains this improvement over the review made in October, 1902, as due to the fact that physicians and surgeons realise more and more the importance of an early diagnosis, and that the operations have become more radical each year. The author has emphasized the importance of a more radical operation in previous issues of the *Bulletin* which have been noted in this JOURNAL, and has discussed the relation between the growth and the ureters and bladder, the efficiency of the blood supply of the ureter, the complications arising from freeing the ureter from its sheath and injury to its blood supply, the dangers of ascending renal infection from post-operative cystitis, and he now fully considers the relation between the rectum and carcinoma cervicis, the object of his paper being to show what may be learned from anatomical and pathological studies as well as clinical experience, and whether these results have any bearing on the more radical operations for this disease. The following conclusions are arrived at:—

1. The relation between carcinoma cervicis uteri and the rectum may manifest itself in the recto-vaginal fistulæ which result from a necrosis of the growth which has involved the rectum in the posterior extension of the disease, and also in accidental injuries to the rectum occurring during hysterectomy.

2. The relation between the uterus and the rectum varies under different conditions and is dependent on the position of the uterus in the pelvis whether in normal anteposition or retroposition, and especially the left and right lateral positions of the uterus. Descent of the uterus also changes the relation between the two organs. The position of the uterus in the pelvis is a most important factor in determining what surrounding tissue may be invaded in the extension of the growth from the cervix.

3. The rectum may be invaded by a direct extension of the growth either through the *cul-de-sac*, the end surfaces of which have become adherent, or the posterior vaginal wall may become involved and the rectum secondarily invaded from the vagina, or in the lateral position of the uterus the growth may extend across the obliterated *cul-de-sac* by the parametrium which lies in front of the rectum, and which may be invaded by the growth.

4. The first demand in the more radical operations for carcinoma

is a wide excision of the primary growth, and portions of the rectal wall may be sacrificed and repaired if involved by the growth.

Six illustrations accompany the paper.

COMYNS BERKELEY.

Styptol in Uterine Hæmorrhage.

WITTHAUER (KURT). *Zentral. für Gynäkol.*, 1904 No. 33.

THE writer's attention was drawn to this preparation of cotarnin in an article by Fackenheim in the May number of the *Therapeutischen Monatschrift*. Fackenheim had used the drug with good results in bleeding due to abortion, new growths (myomata, carcinomata, polypi), and in the climacteric.

It is an anodyne and sedative; it does not excite labour pains. Where uterine contraction is absent it may be combined with ergot. It is dispensed as tablets (=0·05 gr.), and the dose is 1 to 3. Witthauer has obtained good results in menorrhagia of young growing girls where there are no anatomical changes to be found in the genitalia. He records the case of a girl aged sixteen years who was very anæmic from irregular excessive hæmorrhages lasting 8—10 days, which had been going on for nine months. The tablets were given during two attacks of bleeding, with the result that it was completely checked. In the bleeding of endometritis which resisted other drugs, and returned or persisted in spite of curettage, styptol has been used repeatedly by the author with good result. The most encouraging results of all were obtained in the hæmorrhage at the climacteric, which it checked after stypticin and hydrastis had failed. Witthauer had not used this drug in cases of incomplete abortion nor for new growths, preferring operation for such conditions. The writer's conclusions are that (1) styptol is more effective than stypticin; (2) it is useful where there is no indication to bring about uterine contraction; (3) it is harmless and, moreover, it is quite cheap.

CUTHBERT LOCKYER.

Free Bodies in the Fallopian Tube.

FEDOROW (S. J.). *Annales de Gynécol. et d'Obstét.*, September, 1904.

THE occurrence of free bodies in the Fallopian tubes is of very rare occurrence, and the case reported by the author is therefore of great interest. It occurred in a diabetic lady of 54, whose uterus was removed by abdominal section for cancer. She survived the

operation seven days, dying of coma. On examining the uterus and tubes removed at the time of the operation, the right tube was found dilated at its abdominal extremity (sacto-salpinx), the swelling being the size of a walnut. The tube was thickened and the uterine end closed. On cutting into the dilated tube fourteen or fifteen small rounded bodies were found free in its cavity. In form they were oval, polygonal or spherical in shape. Their size varied from a hemp seed to that of a pea or haricot bean. Their surface was smooth, and most of them were exceedingly hard. Their cut surface was greyish yellow, while some possessed a distinct capsule. The wall of the tube itself was thickened, and the mucosa was smooth except towards the fimbriated extremity, where a few folds and excrescences could be made out. Microscopical examination of the free bodies found in the lumen of the tube showed their structures to be somewhat complicated. In the main they were adenomatous, composed of a framework of connective tissue enclosing cavities lined with epithelium. The epithelium was single layered and cylindrical in type, and cilia could be detected. The cavities were irregular in shape, and some were filled with granular or fibrinous *débris*. The larger cavities had undergone a cystic dilatation, and contained papillary ingrowths from the wall. These papillæ were covered with the cylindrical epithelium which lined the cyst. Here and there in the general connective tissue framework of these free bodies capillaries could be made out containing recent red blood cells, in other places the blood-vessels were either empty, or their lumen was filled with connective tissue elements undergoing degenerative changes.

Transformation of benign papillomata of the Fallopian tube into free bodies which occupy its lumen is a very rare occurrence; in fact papilloma of the Fallopian tube itself is not a very common disease. The more recent cases have been reported by Magnez, Lorin, Clark, and Fabricius.

The author concludes that, from his own observations, these free bodies in the Fallopian tube are really portions of papillomatous overgrowth of the mucous membrane. Papillomatous growths of this nature vary in size from a hemp seed to that of a cauliflower, and may or may not be pedunculated. On the other hand, the pedicles of some of these papillomata become very thin and elongated. Very possibly such stalked papillomata get cut off as the pedicle gets thinner and thinner, till at length they are set free in the lumen of the tube itself. In the author's case the free bodies in the tube resembled very closely senile papillomata near the

fimbriated extremity of the dilated tube. Some of the bodies, especially the branched ones, seemed to have been recently detached from their connection with the mucosa since this vessel contained fresh blood; on the other hand, in the spherical or oval bodies, which had a distinct capsule, the blood-vessels were either empty and atrophied or their contents had undergone degeneration, pointing to the fact that they had been detached for much longer periods.

Further, in some of the hardest bodies, necrotic changes were observed in the connective tissue. The change in a way is analogous to that which takes place in appendices epiploicæ which become separated from their attachments and are found free in the peritoneal cavity. As to the exact method of the detachment of the papillary growths from the wall of the tube, the author is uncertain, though he thinks in the main it is mechanical. It is also possible that some may have been detached during the manipulative procedures of the operation itself.

C. Hubert Roberts.

Technique of Colporrhaphy by Sänger's Method.

Borreman (Ch.). *Le Progrès Médical Belge*, September, 1904.

(*a*) *Anterior Colporrhaphy.* A median incision is made with the bistoury, beginning 1 to 1½ centimetres behind the urethral orifice, and ending at the reflection of the vagina upon the cervix. This incision involves the whole thickness of the vaginal mucous membrane. It is very important not to prolong the incision on to the anterior surface of the vaginal portion of the cervix, as the cicatrix which would result would cause or accentuate retroversion of the body of the uterus. It is equally important to avoid separation of the bladder from the neck of the uterus. On each of the lips of this incision place artery forceps at a distance of two to three centimetres. These serve to stretch the vaginal wall during the separation. Seizing those on the right lip with the left hand, begin the separation from the bladder with a bistoury. Having separated a strip five millimetres in breadth, secure a firmer hold with the artery forceps and finish the baring of the bladder by means of tampons of gauze or wool. If the proper plane of connective tissue is found this baring is effected with the greatest ease and with scarcely any hæmorrhage. The same manœuvre is repeated on the left side, and the vaginal wall is by this means detached from the bladder in two strips, forming together an ellipse. Before excising them one should judge whether the separation has been carried far

enough by bringing the bases together in the median line. The excision must be carefully done, not too close to the bladder wall, but leaving a margin of two or three millimetres of vaginal mucous membrane. The raw surface exposed resembles a myrtle leaf, with its pointed extremity turned towards the urethra. When a cystocele is present it is well, before suturing the vaginal wall, to gather the bladder wall by one, or if need be two, transverse "basting" stitches. The suture recommended is fine silk (No. 2). The cystorrhaphy can also be done by overcasting. The vaginal suturing should begin close to the cervix, and end at the urethra. The stitches are separate and close together. No. 3 silk is used. Each stitch takes up at the centre the plaited bladder wall, and of course brings together the cut edges of the vaginal mucous membrane. They should be tied and cut as they are inserted.

(*b*) *Colpo-perineorrhaphy.* Begin by passing a suture through the mucous membrane of the vaginal vault, immediately behind the cervix and in the mid line. This serves as a guide and as a means of traction. The left index finger placed in the rectum pushes the recto-vaginal septum towards the vulval opening. A median incision is then made with the bistoury, about three centimetres long, commencing at the lower part of the vaginal wall and extending on the perineum nearly to the anus; then another incision, curved or V-shaped, following the vulvo-perineal border. This last incision is best made with pointed elbowed scissors. Together the two incisions have the form of an anchor. The order of making them may be reversed, particularly when the perineum is lacerated. The next step is to prolong the vaginal incision up to the point of insertion of the transverse stitch, the lips being seized with artery forceps. The finger is now withdrawn from the rectum, and the stripping of the vaginal wall commenced. As in the case of anterior colporrhaphy, this is done at first with the knife, and subsequently with tampons of gauze or wool. When complete it presents nearly the same appearance as in Hegar's procedure; it is limited below by the V-shaped incision, and laterally by two lines converging to the summit of the vaginal vault. The strips are cut away with scissors, and if there is a distinct rectocele it is treated, as was the cystocele, by transverse suturing. The stitching of the vagina is done by separate sutures, near together, beginning at the upper angle of the raw surface. From this point to near the vaginal orifice each stitch takes up not only the lips of the wound but also the rectal wall. As the orifice is approached the vaginal and rectal walls diverge, and then only the former is sutured, so as to form a new vulval

commissure. It only remains to put in the perineal sutures. Anteriorly these take up in the depth of the wound the newly-constituted vaginal wall, but without perforating it.

R. Hamilton Bell.

On Vesical Calculus.

Zangemeister. *Monats. für Geburts. und Gynäkol.* Bd. xx. Ht. 2.

Vesical calculus is so infinitely less common in women than men, that out of 9,682 cases reported only 205 occurred in women. The author records 11 cases which have come under his charge and draws some conclusions from them. The common starting point of a calculus in woman is some foreign body introduced into the bladder. Out of eleven cases, in six a foreign body was found at the starting point, such as hairpins (3), gold pencil case (1), unrecognisable material either wool or catheter varnish (2). Foreign bodies such as sutures, too, may find their way into the bladder by some other path than the urethra; for instance, after operations for vaginal fixation, hysterectomy, etc. On the other hand, renal calculi, which form the nucleus of so many vesical stones in men are not common in women, and when they do occur and make their way into the bladder, are easily passed in the urine. The foreign body starts a calculus, probably by reason of the vesical catarrh on the one hand and the bleeding which it may cause on the other. Ebstein considered that necrotic epithelium or connective tissue particles were necessary to start a calculus; the author considers that blood plays a much greater part in the causation and deposition of urinary crystals. According to Ebstein the concentric layers of a calculus are caused by alternations of an organic layer (such as epithelium or blood) and a crystalline layer. Of the eleven stones ten were phosphatic and one was calcium oxalate. With regard to symptoms a more or less severe hæmorrhagic cystitis was the rule. Interruption of the urinary stream was never noted, for the reason that the bladder is so formed in the female as to present two lateral pouches, in either of which a stone will lie easily, and does not tend to fall over the urethral opening. On this account, too, pain is less in women than in men. On the whole the symptoms in women are comparatively trifling compared with those of men. Diagnosis too is not easy, for the sound does not readily touch a stone in the lateral pockets, and so the cystoscope and bi-manual examination have to take the sound's place. The objections to the cystoscope are that the bladder

may be intolerant of any distension (with the necessary fluid or air) and that the stone may not be easily brought into view, as it lies in a lateral pouch of the bladder. Röntgen rays were found a useful aid to diagnosis in two of the author's cases. The usual methods of treatment are:

1. Extraction through the dilated urethra, which is devoid of danger so long as the dilatation does not exceed 3cm. in diameter.

2. Colpocystotomy, extraction of the stone through a vaginal incision.

3. Suprapubic incision—rarely necessary in women.

4. Lithotrity which is not a good operation in women, owing to the danger of large pieces remaining behind in the lateral pockets.

THOS. G. STEVENS.

Contribution on Spurious Extra-uterine Pregnancy.

KLEIN. (East and West Prussian Gynæcological Society.) *Monats. für Geburts. und Gynäkol.* Bd. xx. Ht. 2.

H. W. FREUND at the Congress at Giessen showed that a fair percentage of cases were diagnosed and operated upon as extra-uterine gestation which turned out to be some other condition, and for these cases he coined the expression "spurious extra-uterine gestation." Others in discussion agreed with him, citing such instances as hæmatoceles caused by perforating gastric ulcer, traumatism and other conditions, but according to the work of Kober and Schambacher the failure to find chorionic structures microscopically cannot be absolutely accepted as proof of the absence of extra-uterine pregnancy. Later Freund indicated more precisely what the etiological factors were which so closely simulated extra-uterine pregnancy, among them being hæmorrhages induced by fatty heart, the hyperæmia of the puerperium and lactation, genital tuberculosis, the high blood pressure induced by uterine contractions, chronic salpingitis hæmorrhagica, etc. Kustner too pointed out the not infrequent occurrence of hæmatosalpinx on the non-gravid side, and Krömer in old cases of hæmatocele where every part of the ovum was torn out of the tube, the impossibility of microscopic proof of tubal gestation at all, on account of complete healing and epithelial regeneration in the tube. The author describes a more interesting case bearing on this point in some degree, where

there was a true extra-uterine pregnancy in the right tube and a spurious one in the left. This, of course, occasioned no error of diagnosis because the left tube was really gravid, but the anatomical condition found at the operation revealed a condition of the left tube which might fairly be called spurious extra-uterine pregnancy. The patient was a doctor's wife who had suffered from movable kidney, had had three children, and who believed herself at the time to be three months pregnant, as she had had that period of amenorrhœa. The patient was seized with a sudden attack of abdominal pain which induced fainting and collapse, previous to which she had had some dragging evanescent abdominal pain for a few days. As there were no obvious symptoms pointing to internal hæmorrhage radical treatment was delayed a few hours. However, another attack of acute pain and collapse appeared, and signs of abdominal hæmorrhage were found. Laparotomy was performed, and while removing the enlarged right tube an intact two months' ovum escaped from the fimbriated end. The left tube was then examined and was found to be 10—12cm. long, as thick as a thumb and having a laceration 1cm. long in its posterior wall from which dark blood issued. The patient recovered in spite of some exudative pleurisy; the uterine decidua escaped intact on the tenth day. The examination of the specimens showed nothing special in the gravid right tube, but the first idea as to the left was that it had contained an older pregnancy which had escaped earlier through a laceration and had disappeared amongst the copious blood coagula in the abdomen. However a careful microscopic examination of this tube by Professor Opitz showed no trace whatever of chorionic villi, but that the condition was typical of chronic salpingitis hæmorrhagica. It could not be believed that the laceration in the tube would have remained open if there had been a previous tubal gestation, and although the negative microscopic finding could not be accepted as absolute proof of the absence of gestation, yet a careful consideration of the condition, points to the conclusion come to by Opitz. How then could the tear in the wall of the left tube have been caused, and why was it full of blood? The author suggests that the preliminary pains felt by the patient were right tubal contractions resulting in partial separation of the ovum and some hæmorrhage. This blood finding its way into the uterus was unable to escape because the decidua was intact and so found its way into the left tube. Here, as there had been old salpingitis, the ostium abdominale was closed and so such a pressure was gradually produced that at last the tube burst! This explanation certainly seems somewhat

artificial, but at least it is theoretically possible, and considering the whole case it may possibly be the true explanation. This too may possibly be the explanation of other cases in which hæmatosalpinx has been found in connection with a tubal pregnancy on the other side.

THOS. G. STEVENS.

The Employment of Warmed Horse Serum against Infections in Abdominal Surgery.

PETIT. *Rev. de Gynécol et de Chir. Abd.* No. 4. July-August, 1904.

METCHNIKOFF has shown that the normal method of defence of the organism against the attacks of micro-organisms consists in an attempt on the part of certain polynuclear leucocytes (phagocytes) to devour the organisms. A simple laparotomy in animals produces a "polynucleosis," and this condition is increased by any variety of drainage.

Issaëf. has shown that certain substances when inserted into the peritoneal cavity have the power of stimulating this "polynucleosis," and by producing in this way an abundant phagocytosis he has protected animals against large intraperitoneal doses of cholera bacillus. Petit, working under Metchnikoff, has demonstrated (*Annales de l'Institut Pasteur*, June, 1904) that the most potent agent in producing intraperitoneal "polynucleosis" is warmed horse serum and by employing this agent he has protected animals against large intraperitoneal injections of bacillus coli and staphylococci. Beyond a slight rise of temperature (not constant) intraperitoneal injections of this serum appeared to produce no symptoms in animals.

Petit has used intra-peritoneal injections of this horse serum in sixteen abdominal operations on the human subject: the quantity injected was generally 20cc., and drainage by gauze was at the same time employed. The cases were as follows: 2 cases of suppurative pelvi-peritonitis, both cured; 4 cases of septic inflammation of the uterine appendages, with one death. The fatal case was one of streptococcic infection: the patient died 10 days after operation from septic pneumonia and facial erysipelas. Three cases of appendicitis with one death. In the fatal case death occurred 16 days after the operation from double suppurative broncho-pneumonia: the condition of the peritoneum was satisfactory. One case of appendicitis with old inflammation of the appendages—cured. Two cases of

hysterectomy for uterine fibroid—cured. A case of streptococcic infection after abortion producing a phlegmon of the broad ligament —cured. A case of streptococcic infection after abortion in which the uterine cavity was packed with gauze that had been soaked in the serum—cured. Two operations on the same woman for ruptured tubal gestation both successful. Beyond a transitory rise of temperature in some cases no bad result was noted which could be attributed to the use of the serum.

G. Drummond Robinson.

OBSTETRICS.

The Blood in Pregnancy.

Thompson (William Lawton). *Bulletin of the Johns Hopkins Hospital*, June, 1904.

In view of the unsettled state of the question and in an endeavour to clear away some of the doubtful points concerning the blood state of pregnancy, observations were made on 12 patients. Each patient was examined once a month from the time she came under observation. Two cases came under observation at the second month, two at the third, four at the fourth, three at the fifth, one at the sixth. Four of the cases have been followed throughout their pregnancy and subsequent delivery, while the other eight are still under observation. The monthly examination included (1) enumeration of the red blood corpuscles; (2) estimation of the hæmoglobin percentage; (3) count of leucocytes; (4) differentiation of leucocytes; (5) delimination of the specific gravity of the total blood content. The series comprises 165 various estimations on 33 separate blood examinations. Results:—(1) A moderate decrease was observed in the red blood corpuscles rather early in pregnancy, remaining throughout the middle months, and rising again to normal at the termination of pregnancy—not, however, in all cases; (2) a low percentage of hæmoglobin, constant throughout the first seven months, rapidly approaching normal as pregnancy draws to a close; (3) a slight absolute leucocytosis exists in every case of pregnancy, but this slight leucocytosis does not support the theory that it is due to any positive chemio-taxis; (4) there is no variation from normal

in the different forms of colourless corpuscles, the leucocytosis affecting all forms of white cells alike; (5) the specific gravity is high at the onset of pregnancy, diminishing by progressive steps, to reach its lowest level in the middle month, rising to normal at term.

COMYNS BERKELEY.

Thrombosis of the Internal Iliac Vein during Pregnancy.

GOLDSBOROUGH (F. C.). *Johns Hopkins Hospital Bulletin*, June, 1904.

DR. GOLDSBOROUGH places his case on record because of its infrequent occurrence and the scanty and unsatisfactory statements concerning the etiology. The author, after a careful review of the literature on the subject of this condition can only collect ten cases of phlebitis during pregnancy, and the reports of three of them—Bradford, Commandeur and Dickinson—are lacking in many important details. Of the remaining seven, in two—Bonnet-Laborderie and Gupat—the thrombosis occurred in both legs. The condition was ascribed to toxæmia of pregnancy associated with chronic anæmia resulting from paludism. Of the five cases in which only one leg was affected, the left femoral vein was involved in four of them—Brindeau, Audebert, Saint Auge, Bacon—and in Beaudry's case the right saphena. In no instance was the etiology clear. In two cases pregnancy terminated spontaneously at the fifth and eighth months, in six the patient went to term, and in two no information as regards the point was available. In only two instances did the patients suffer from fever. All these patients recovered with rest and immobilisation of the affected part. The case Dr. Goldsborough reports was that of a white woman, æt. 29, admitted to the hospital for constipation, nausea, vomiting and swelling of the left leg, and pregnant for the first time about nine months. A week prior to admission the patient had been quite well, and believed that no one had suspected her condition, which she successfully concealed by wearing a specially constructed corset which enabled her to compress her abdomen. Seven days before admission she had to take to bed on account of œdema of the leg, and four days later vomiting came on. The left leg was enormously swollen from groin to toes No sugar or albumen was present in the urine. As the vomiting continued for 48 hours after admission, labour was induced by a De Ribes' bag, which was put in at 5 p.m. and burst at 3 a.m. next morning. The pains then completely disappeared.

At 10 a.m. the cervix was dilated by Harris' method, and the child delivered by version; the placenta was removed manually, and a lacerated perineum repaired. She died 15 hours after delivery. At the *post-mortem* examination the lumen of the left common iliac vein was found completely occluded where it was crossed by the right common iliac artery, and from this point the thrombus extended through the external iliac vein to the femoral and saphenous veins. Cultures from the heart's blood and from the thrombus at the time of *autopsy* gave negative results, and no bacteria were discovered in suitably stained sections of the thrombus. After considering all the possibilities the author thinks that the cause of the thrombosis was the corset which forced the uterus against the lumbar vertebræ, and by pressure on the veins in that neighbourhood interfered with the return of the blood.

COMYNS BERKELEY.

The Ultimate Results of Induced Labour for Minor Degrees of Pelvic Contraction.

NORRIS (RICHARD C.). *Amer. Jour. of Obstet.*, September, 1904.

THE excellent results for mother and child following the elective Cæsarean section for pelvic deformity have induced many operators to unnecessarily perform the operation for lesser degrees of pelvic contraction. A delayed labour with the history of a previous difficult forceps delivery, and even the avoidance of perineal lacerations, likely to follow a breech delivery in a first labour, have been advanced as justifiable indications for Cæsarean section.

Norris is a strong advocate for the practice of this operation in degrees of pelvic narrowing below 7·5cm. in the generally contracted, or 7cm. in the flat, pelvis; but in a pelvis with a conjugate between 8 and 10cm. he believes that the skilful induction of labour at the latest permissible period of pregnancy is the best treatment, and states that the object of his paper "is to exploit the usefulness of inducing labour in *lesser* degrees of contraction, in order to give Nature the little assistance she may need to save the children that without this aid are frequently lost after version or a difficult forceps delivery at term." When the patient is seen too late for the induction of labour at the most suitable time, it is his practice not to allow the case to go to full term, but to terminate the pregnancy at once and to deliver the case as may seem best after the test of labour. Two dangers have to be borne in mind; these are, first, the induction of labour earlier than the degree of contraction demands, and, secondly,

the too late interference so that operative measures are required to complete delivery. The crux of the whole matter is to steer between these two, a problem which demands the greatest experience and skill. The most reliable information is to be gained by Müller's method of manual engagement of the head by supra-pubic pressure and the study of the relation of the head to the symphysis by abdominal and vaginal examination; next to this comes the information gained by the knowledge of the exact date of the last menstrual period and an accurate estimation of the size of the pelvis. Operative interference, version or forceps, adds a distinct risk to the child and when possible should be avoided. After labour pains have commenced it is an advantage to place the patient in the combined Trendelenburg-Walcher posture.

With regard to the mode of induction, Norris believes "we have a most satisfactory method in the proper introduction of a bougie, followed by partial dilatation of the cervix, if required, and then the insertion of the largest size Vorhees' bag, upon the stem of which more or less continuous traction is made by means of a cord and weight if necessary, to awaken pains and aid in dilatation of the cervix." The average time required by this method is 29½ hours. Tables appended give the results in 30 cases; 29 infants are living and well, some of them being nine and ten years of age, seven died. Of these latter two were still-born, in one craniotomy was necessary, and one suffered from a large spina-bifida incompatible with life—one died on the fifteenth day from infection of the navel, one on the third from intra-peritoneal hæmorrhage, and one on the fifth day from aspiration pneumonia. "If I or anyone else had elected to do Cæsarean section on these thirty patients in hospital and private practice is it likely that the ultimate results would have been better as regards maternal and fœtal mortality and morbidity? Ten per cent. primary fœtal mortality; seventy-seven per cent. of the children living to-day from two to ten years of age. Cæsarean section would have occasioned greater notoriety, but not greater satisfaction to an earnest student of practical obstetrics." HERBERT WILLIAMSON.

Three Fatal Cases of Serious Puerperal Disease.

KAMANN. *Monats. für Geburts. und Gynäkol.* Bd. xx. Ht. 2.

KAMANN reported these three cases at the meeting of the Gynæcological Society of Breslau remarking that cases of fatal illness some time after delivery were liable to appear in the official statistics as heart or lung or other disease, when they should really appear as

puerperal infections. In this way the statistics of puerperal sepsis are apt to be misleading and to show a much lower death-rate than really is the case. The first was a 23 years old secundipara, whose labour was quite unassisted and no examinations were made. Two days later the temperature began to rise, and after three weeks' fever with severe rigors she was admitted to hospital. The chief symptom found was a loud systolic cardiac murmur heard over the centre of the sternum. This was diagnosed as a metastatic endo- and pericarditis due to puerperal sepsis. There was no obvious local lesion in the pelvis. In spite of treatment the patient died four weeks after labour. At the *autopsy* an encapsuled peritoneal collection was found in the pelvis and some endometritis at the placental site. The heart showed *no* valvular or pericardial lesion, but in the right ventricle was a large antemortem clot fixed firmly to the wall, whose upper end extended between the flaps of the tricuspid valve, and a similar clot was found in the left branch of the pulmonary artery. The blood stream playing through the interstices of these thrombi had given rise to the heart murmurs described. In addition there were several pulmonary infarcts. This unusual cardiac condition must have been started by the displacement of a clot from a pelvic vein, but apparently these emboli were not infective as the patient escaped a general infection through the encapsulation of the pelvic exudate.

The second patient was 37 years old, had had five children, and had been recently delivered prematurely. She had been examined once by a midwife. The temperature rose soon after delivery, and although there was no septic endometritis found, the most obvious sign of disease was a loud diffuse cardiac murmur and signs of pulmonary infarction. The patient had many rigors, a temperature with very marked remissions and signs of gangrene of the lung. At the *autopsy* again no signs of endocarditis were found, but there was gangrene of the lung started no doubt by a septic embolus, which during its stay in the heart had produced the murmur described. The source of this embolus was an infective thrombosis of the right ovarian vein and vena cava inferior. This vein appeared to be 2cm. in diameter and was filled with a suppurating thrombus.

The third case was one of pelvic cellulitis showing itself 14 days after a natural labour and giving rise to an abscess with many loculi which gradually spread, and led to general intoxication to such an extent that the patient died four months after delivery in spite of incisions, drainage, etc.

THOS. G. STEVENS.

Hysterectomy and Acute Puerperal Infection.

CRISTÉANU. *Rev. de Gynécol. et de Chirur. Abdom.* No. 4. July-August, 1904.

CRISTÉANU has collected 137 published cases of hysterectomy performed for septic infection following labour or abortion. The mortality in these cases was 63 per cent.; 98 cases were after labour, with a mortality of 68·4 per cent.; 39 cases were after abortion, with a mortality of 46·2 per cent. Six were cases of sloughing fibroid complicating the puerperium and of these 3 died. In 5 cases operation was undertaken on account of perforation of the uterus, due to curettage, etc.: in all these cases the patients recovered. In 34 of the cases there was retention of a portion of the ovum, and of these 19 died and 15 were cured. There were 29 cases of infection complicated by periuterine suppuration—with a mortality of 58·7 per cent. In 80 cases there was acute puerperal septicæmia, "without localisations," with a mortality of 75·6 per cent. In all these groups of cases the mortality was greater where the infection followed full time labour than when it followed abortion. Chistéanu concludes that "the mortality in cases of puerperal infection treated by hysterectomy far exceeds the mortality obtained by a treatment of non-intervention of which the mortality does not exceed or even reach 10 per cent."

G. DRUMMOND ROBINSON.

REVIEWS OF RECENT BOOKS.

TRAITÉ MÉDICO-CHIRURGICAL DE GYNÉCOLOGIE. By F. Labadie-Lagrave, Médecin de la Charité; and Felix Legueu, Chirurgien des Hôpitaux, Paris. Third edition. Paris: Felix Alcan, 1904.

This imposing treatise of nearly 1,300 pages is the third edition of a work published as recently as 1898, and awarded on its first appearance special prizes by the Academy of Science and the Academy of Medicine of Paris. The fact that it has run through three editions in six years shows that appreciation of it in France is by no means confined to the occupants of professional chairs, but is shared by the rank and file of the profession in that country. We feel assured that it deserves well of all English gynæcologists whose French is sufficiently strong to carry them through the authors' clearly-written pages, which are not too idiomatic in expression for easy reading by the foreigner. The work is a monument of industry, and contains mines of information which well repay exploration. It is, of course, a work of reference; no student could be asked to face it; but workers in special departments and teachers of gynæcology in all countries will fully appreciate its value. Pains have been taken to bring the new edition thoroughly up-to-date, and in their preface the authors tell us that in the following sections the most important alterations have been found necessary: *menstrual retention in double uterus, gangrene and suppuration in fibroids, methods of peritonisation, conservative methods of treatment of inversion of the uterus and of fibroids.* The preface also contains an interesting comment on the tendency of French gynæcologists in one particular, for the authors remark that in successive editions vaginal hysterectomy has come to occupy a diminishing field; that it is being superseded in relation to fibroids, cancer and suppuration; that it is an operation of transition only and destined to disappear, leaving the field clear for the much more precise and sure abdominal method.

We cannot do more than indicate briefly the extensive field covered by the authors, and the general plan of their work. The treatise is divided into two parts, the first *general*, the second *special*. The general part includes a consideration of the chief pelvic symptoms in women, *e.g.*, pain, leucorrhœa, amenorrhœa, dysmenorrhœa, and metrorrhagia; the consideration of amenorrhœa, as a symptom and not as a disease cannot be too highly commended, and the same may be said of the other forms of menstrual abnormality. Then come diagnosis and methods of local examination and following this gynæcological therapeutics in several sections. Among these sections a short one dealing from the physician's point of view with the various drugs which have special application in gynæcology (as the authors say *médicaments utérins*) is of great practical value and indicates that the authors take a wide view of their subject and do not scorn the aid of drugs or refuse consideration to any extra-surgical methods of relief. Hydrotherapeutic methods, which we neglect so much in this country, receive full consideration, and a good deal of

useful information will be found with regard to the method of "*lavage du sang*," or the injection of solution in bulk directly into the circulation. Methods of local treatment, including atmokausis, electrical applications, dilatation of the cervix and massage, are then fully dealt with.

The special part follows more conventional lines, and deals in great elaboration with gynæcological affections, their pathology, diagnosis and treatment. No better account could be desired of the teaching of the French school than that given here by the authors, and to all who wish to know what our neighbours are doing in this department we heartily commend this painstaking and exhaustive treatise.

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